federal register

TUESDAY, MAY 13, 1975

WASHINGTON, D.C.

Volume 40 ■ Number 93

PART II

FEDERAL COMMUNICATIONS COMMISSION

■

PRIVATE OPERATIONAL-FIXED (MICROWAVE) SERVICE

Title 47—Telecommunication

CHAPTER I—FEDERAL COMMUNICATIONS COMMISSION

[Docket No. 19869; FCC 75-469]

PRIVATE OPERATIONAL-FIXED (MICROWAVE) SERVICE

In the matter of amendment of the Commission's rules to establish a private operational-fixed microwave radio service (Part 94). Docket No. 19869; FCC 75-469.

1. On November 14, 1973, the Commission adopted a notice of proposed rulemaking in the above entitled matter to establish a new Part 94 in the Commission's rules to govern the licensing and operation of private operational-fixed microwave systems in frequency bands above 952-MHz. Presently, such systems are regulated by limited rule provisions in Parts 81, 87, 89, 91, and 93 which cover, respectively, operations in the Maritime, Aviation, Public Safety, Industrial and Land Transportation Radio Services.

2. Comments in response to the notice have been submitted by the parties listed in Appendix A. Basically, the comments supported the proposal for a new Part 94, entitled Private Operational-Fixed Microwave Service, in the Safety and Special Radio Services as an independent radio service which consolidates all procedural and substantive rules for these microwave operations. The comments also confirm the Commission's view, as expressed in our notice, that the proposal for a separate microwave radio service was timely and promises to promote the orderly and compatible growth of private microwave systems. In consideration of these factors, we are finalizing rules to establish Part 94.

3. The new radio service is primarily intended for comprehensive regulation of private operational-fixed microwave systems. The rules contain new technical standards, as well as policies, procedures, and requirements applicable specifically to the special problems associated with the licensing and operation of these radio facilities. These include rules for the development of a data base by the Commission for use by applicants in planning their operations; procedures for applicants to match their frequency requirements to appropriate bands; a channeling plan that provides standards for frequency pairing, channel spacing, and updated bandwidth requirements; and provision for adherence to noninterference criteria, related to power, transmitter frequency tolerances, and antenna limitations, that would be applied by applicants to afford protection to existing microwave systems.

4. As noted, the comments essentially support the proposals. However, a number of important modifications were recommended. In addition, the Commission has adopted rule changes in a number of related proceedings which affect private operational-fixed systems. We will cover all of these matters in detail in the following discussion as to those specific provisions in the proposals which we find require clarification and/or significant modification.

Part 94 Changes—Subpart A—General Information—5. Definitions: The new rules part contains a number of definitions for private microwave stations. Recommendations were received for clarification or minor changes in certain of the provisions set forth in proposed § 94.3. Definitions where changes of this nature have been made cover Effective Radiated Power, Frequency Tolerance, Long and Short Haul Systems, Periscope Antenna Systems, and Rated Power Output.

6. *Eligibility:* Proposed § 94.5 limits eligibility in Part 94 to any person qualified for licensing in Parts 81, 87, 89, 91, or 93 of the rules. Objections in some of the comments to the general nature of this provision indicate that the eligibility rule needs to be modified. It was intended that applicants would have to demonstrate not only their qualification, but also, that the communications will relate to activities which are permissible in the service in which eligibility is established. Accordingly, this requirement is reflected in the provision being adopted.

7. *Permissible Communications:* In proposed paragraph (a) (1) of § 94.9, API recommends that, consistent with other rule parts, we include as permissible communications of the licensee those transmissions that are related to and conducted by its subsidiary corporations. We agree with this suggestion and the adopted rule is being modified in this respect. Mobile Marine Radio, Inc., and a number of other licensees of public coast stations, operate private operational-fixed facilities in connection with their public coast stations. However, these facilities are not permitted to transmit public correspondence which is a common carrier function, and we have provided an exception on a limited basis only in consideration of certain extenuating circumstances. Nevertheless, these facilities should properly be licensed in the Domestic Public Radio Services (Part 21). Therefore, continued authorization of these facilities for public correspondence communications will be allowed only for the remainder of the existing license terms, plus one additional license term in order to amortize equipment. Following this renewal license period, these operations must be licensed in the Domestic Public Radio Services.

8. *Interconnection:* Proposed § 94.13 was intended to incorporate into the rules long standing Commission Policy under which private microwave system licensees have been permitted to interconnect their systems with the telephone and other facilities of communication common carriers. AT&T argued that matters involving "interconnection" of private and common carrier facilities should not be decided in this rule making proceeding. But, we are not here deciding "interconnection" issues, as such, i.e., tariffs, practices, or policies relating to interconnection. We agree that such issues should be resolved in other more pertinent proceedings. All that we are deciding here is that, within the scope and objectives of Part 94 of the rules governing private microwave operations, interconnection is permissible. As we have said, this has been the Commission's policy and, in practice; private microwave systems are extensively interconnected under applicable tariffs or under specific arrangements between the licensees and the carrier involved. Accordingly, proposed § 94.13 will be adopted.

9. *Frequency Assignment Policies:* The Commission policies applicable to assignment of microwave frequencies were set forth in proposed § 94.15. In paragraph (a), a provision was included to permit time-sharing of frequencies when full-period service is not required by one licensee. API recommends that a time-sharing agreement be filed for such operations and we are including this requirement. We are also adopting suggestions to combine proposed paragraphs (b) and (c). These provisions set forth requirements for applicants for new or modified facilities to show either that interference to systems of existing licensees or other applicants will be within the protection criteria set forth in Subpart C, Technical Standards, or that there is agreement to a higher level on interference. An objection to requiring a showing of this nature was received from CSIFAC who contends that the provision places an undue burden on applicants. The argument given is that since receiver selectivity characteristics in systems to be protected are not regulated, there is no way to assure that interference cannot result. However, the interference protection criteria proposed under this part are indirectly related to assumed receiver selectivity and stability standards that are quite reasonable and should serve to counter any problem in this regard. We will discuss the protection criteria more fully in connection with proposals applicable to technical standards.

10. There was considerable response in the comments to the policy in proposed paragraph (d) of § 94.15, that requires applicants to select the frequency band where the available bandwidth is most consistent with the proposed communication requirements. Most parties supported the need for this provision as being necessary for the most efficient use of available spectrum. Consequently, there was objection to permitting an exception for closed-circuit ETV operations which would allow these licensees additional bandwidth in the 6 GHz band for video operations. The Commission believes that this point is well taken. We have been authorizing some ETV systems to use 20 MHz channels in the 6 GHz band. However, this band is not intended for wideband uses. The preponderance of operational fixed systems are of a narrow-band nature and these requirements have been accommodated in the bands below 10,000 MHz. Consequently, and in view of the relatively limited amount of spectrum available in these bands, we have determined that the public interest

would be served best by maintaining these bands for narrow band operations.[1] For these reasons, the Commission intends to license these video systems in the 12 GHz band where sufficient spectrum is available and it has been demonstrated that operations of this kind can be successfully conducted.[2]

11. The proposed frequency assignment policy in paragraph (e) of § 94.15 is applicable when applicants want to use frequencies other than those listed; and the policy in subparagraphs (f) and (g) is applicable to the manner in which we permit use of paired frequencies. Modifications of proposals as to these provisions essentially relate to exceptions recommended in a number of comments which we believe to be justified. Most of the exceptions exempt presently licensed microwave stations from the policy limitations on the number or on the use of frequencies. Exceptions are also included to take into consideration inter-system or intra-system interference problems that apparently would result from compliance with the policies involved.

12. One other issue raised in the comments concerning the frequency assignment policies relates to the proposal in paragraph (h) of § 94.15. This policy limits the number of multiple-transmit frequencies employed from a single station location to not more than one-fourth of the available frequencies in a band. A number of the parties objected to this limitation arguing that the total use of the spectrum would not be affected or improved by this requirement. We agree, but our objective here is to encourage maximum reuse of frequencies by each applicant rather than to put this engineering and financial burden largely upon the latecomer to the location. Existing licensees will be permitted to continue their use of frequencies and thus are not affected. No reasonable alternatives to these proposals were received, accordingly, we are retaining a limitation in this regard. Nevertheless, we agree with those parties who state that the number of frequencies which are assignable under the limitation ought to be specific and not a variable which results in only two frequencies being assignable in some bands, while other bands, permit many times that number. Consequently, based primarily on our experience as to the reasonable requirements for multiple-transmit frequencies, we are limiting to four pairs the number of frequencies assignable to a licensee for this purpose.

12(a). *Cooperative Sharing* — Basic existing rules for sharing microwave stations are incorporated into Part 94 without significant changes. However, limitations previously imposed on interservice sharing are eliminated and all eligibles under this part may participate if the frequencies used are available to all participants. This proposal was not contended in the comments and is being adopted.

Subpart B—Applications, Authorizations, and Modifications—13. *Applications:* Proposed § 94.25 covers filing of applications. Subparagraph (c) states that 60 days should be allowed for application processing. California notes the longer average processing time being experienced for microwave applications and suggests a more reasonable period. We agree and have provided that applicants should anticipate a 90-day processing period. Another modification we are making to this proposed section is to delete paragraph (g)(5). This provision is applicable only to new microwave stations for relaying television, standard, or FM broadcast signals to community antenna television systems, and we are no longer licensing new systems for this purpose. For presently licensed systems, Wentronics, Inc., Cox Cable Communications, Total TV of Santa Rose, Inc., and Cablecom General, Inc. request extension of the 1976 licensing cut-off date in § 91.552(e). To permit fuller equipment amortization, we are replacing the Part 91 provision with paragraph (h) in § 94.25, which authorizes continued licensing of these systems until August 1, 1980.

14. Provisions relating to preliminary processing of applications are set forth in proposed § 94.33. Here, we are adopting a recommendation from API that we add a paragraph (g) "to provide for some 'grace period' for resubmission of returned applications in Part 94 as elsewhere in the Commission's rules and regulations (§ 1.959)."

15. *Modification of Stations:* Some recommendations were received as to proposed § 94.45 which deals with changes in licensed stations that require modification of authorizations. A major revision concerns paragraphs (4) and (5), where it was proposed that antenna location changes of more than five seconds must have prior approval by the Commission. EIA states as to this provision:

> • • • The five second coordinate changes allowed by the rules as proposed could have a significant effect on the interfering path azimuth under certain conditions and, consequently, may have an equally significant effect on interference levels at stations as far as five to ten miles away. We believe a better figure would be one second since this is the accuracy of most automated interference prediction systems today and would not be too burdensome on the applicant • • •

The Commission believes this change to one second is warranted and it has been adopted.

16. *Placing a Station in Operation:* A number of parties also suggested modification of proposed § 94.51 concerning the time for placing a station in operation. Presently, the requirement is for operation to commence within eight months from the date of license grant. AAR recommends an increase to 12 months "in order to more closely conform to actual experiences of delays due to weather, construction problems, material shortages, and the like." We believe this is appropriate and have revised the rule to this effect in Part 94 and also in Part 1 (§ 1.932).

Subpart C—Technical Standards—17. *"Grandfather" provision:* The proposals pertaining to specific microwave technical standards were extensive and include frequency allocation requirements and interference protection criteria that were intended to optimize capability and efficiency in frequency utilization. Many comments were received concerning the date, January 1, 1980, that we proposed to make these standards applicable to existing systems. Some comments supported this date but most parties argued that this was too soon for amortization of existing equipment. They suggested dates ranging from 1985 to "indefinitely for existing systems causing no interference." The Commission finds that a compromise date is warranted which gives due consideration to maximizing the use-potential of present systems, while at the same time assuring that by a reasonable future time all systems conform to state-of-the-art technical standards and thus improve the efficiency of the use of the microwave bands. We believe that a "grandfather period" until August 1, 1985, achieves these objectives and an exception to permit existing systems to continue their present operations until this date is being provided. It is noted, however, that although this exception applies to some 10,000 presently licensed stations, the effect will not be as extensive as appears since many of these systems will conform to the new standards, and modification or expansion of these systems will not be permitted without compliance with the new requirements.

18. *Frequency Bands*: The frequency bands for operational-fixed stations were specified in proposed § 94.61(b). Largely as a result of action taken in other proceedings, there are substantial changes and additions to these bands. In the Report and Order in Docket 19547, the Commission conformed its rules to revisions adopted for the International Radio Regulations by the Space World Administrative Radio Conference held in Geneva, Switzerland in 1971. Several of these changes provide standards for the sharing of certain operational-fixed frequency bands for space satellite uses. These changes have been incorporated where applicable into the frequency limitations of § 94.61(b). The proceeding in Docket 18920 also effected important changes. By a Second Report and Order adopted June 25, 1974 (FCC 74–657), the Commission allocated a number of microwave bands between 18 GHz and 40 GHz for regular assignments to operational-fixed stations. The bands involved are 18360–19040 MHz, 21200–23600

---

[1] In addition to present requirements, it is noted that the Commission recently adopted rule changes which provided that the upper portion of the 6 GHz band is to be shared with space stations in the Fixed Satellite Service. See the Report and Order, Docket 19547 (FCC 73–169), which was adopted February 14, 1973.

[2] It is noted that there is pending before the Commission a petition from API recommending as did many of the comments herein, that some of these operations could be licensed in the Broadcast Auxiliary band 6875 to 7125 MHz. API's petition is indexed RM–1878.

MHz, and 38,600–40,000 MHz, and the new provisions require that these bands be shared with stations licensed for operations under Part 21 or 25 of the Commission's rules. Finally, in Docket 19493 (FCC 74–34), in a Report and Order adopted January 9, 1974, the Commission provided that frequencies in the 2150–2160 MHz band are to be shared for operation in the Multi-point Distribution Radio Service.

19. In the Notice, it was proposed that the mobile band 6525–6575 MHz be reallocated for operational-fixed use. This change was widely supported as being more responsive to user requirements for microwave systems and it is adopted. It was also proposed that the frequencies 6535/6575 MHz be allocated for emergency restoration, maintenance bypass, or other occasional-use purposes. This was supported and is adopted to include these uses and other temporary-fixed applications. NAM, however, asks that we go further by providing similar allocations for these purposes in the 2 GHz and 12 GHz bands. We see there could be a need for extending these operations, but there are no available unassigned frequencies in these other bands, so that it would not be possible without dislocating licensees to dedicate channels for these functions. Consequently, we are denying this request.

20. Comments concerning our proposals with respect to use of the bands below 10,000 MHz by licensees who establish eligibility in the Business Radio Service were generally opposed to providing access by these users. Presently, these licensees must use bands above 10,000 MHz. This restriction was proposed to be eliminated below 10,000 MHz, except that in the 1850–1990 and 6575–6875 MHz (now 6526–6875 MHz) bands, the restriction was to be eliminated only for business users who operate long-haul systems. (A system in which the longest tandem path length exceeds 250 miles.) UTC and other parties opposed this proposal and argued that the requirement for business access to the lower microwave bands had not been demonstrated, but our proposals would encourage such use and produce the early saturation of spectrum required for other radio uses, particularly in the 2 GHz and 6 GHz bands where 10 MHz channels could be authorized for extensive long-haul systems. It was recommended that in lieu of permitting business users access to these two bands that we re-channelize the 12 GHz band to meet long-haul requirements.

21. UTC raises an important issue. The comments do not support a need for immediate access to the 2 GHz and 6 GHz bands by long-haul, high-density business users. Further, we agree with the argument that additional study is required in order to determine whether the 2 and 6 GHz bands will be able to accommodate present users as well as potential users eligible in the Business Radio Service. Accordingly, this proposal is not adopted at this time. In the interim, the alternative of re-channelizing the 12 GHz band by providing for 10 MHz bandwidth assignments in addition to the 20 MHz bandwidth assignments now authorized appears to be a practical solution. However, the narrow band needs of business users, on the other hand, we find should be met, as proposed, in the lower microwave bands, other than 2 and 6 GHz, where the narrower bandwidths available are consistent with the channel requirements involved. Our proposal in this regard, therefore, is being adopted. One other recommendation by UTC was that we limit use of bands below 10,000 MHz by licensees eligible in the Manufacturer's Radio Service to long-haul operations. However, manufacturers were never restricted in these bands and there is no evidence that they are utilizing more than their reasonable share of the spectrum. We see no need for a restriction in this regard.

22. In providing access to bands below 10 GHz for general business uses, CSIFAC notes that we did not propose to continue the exclusive dedication of frequencies in the 952 MHz band which is presently accorded for Central Station radio alarm usage in the Business Radio Service. (See § 91.554(b)(23).) This is true, but as noted in its comments the Central Station Protection Industry has made little use to date of these exclusive frequencies which were allocated a number of years ago, and there is no indication of any significant demand for such use which justifies dedicated channels.[3]

23. API notes a need for revision of the proposed provision that would permit use of frequencies in the 2.6 GHz band for operations authorized in the Industrial and Land Transportation Service (Parts 91 and 93) only on a secondary basis to uses allowed under the Public Safety Radio Service (Part 89). This provision is covered in § 94.65(f)(3). We concur with API that there is no further justifiable need for this distinction and the adopted rule deletes the limitation so as to provide access to the band by all categories of operational-fixed users on an equal basis.

24. *Interference Protection Criteria:* The major innovation for licensing operational-fixed stations was the proposal that new stations operate within standards that are designed to limit the level of inter-system interference involved in the new facilities. These interference protection criteria were set forth in proposed Section 94.63. The provision contemplates that applicants for new or modified microwave systems will make a frequency engineering analysis to determine that the proposed facilites will not cause interference to previously authorized systems, of a magnitude greater than specified in the criteria, unless agreement to greater interference has been entered into under the assignment policy in § 94.15(b). The proposal provides that the criteria, shall be applied by calculating the ratio in dB between the desired (carrier) signal and undesired (interfering) signal (C/I ratio) at the input to the receiver under investigation. This is a complicated procedure and we proposed that the methods employed shall follow procedures specified by the Electronic Industries Association (EIA), except that where this was not feasible the rules specify appropriate formulas for these purposes.

52. The Comments on the interference protection criteria requirements were generally favorable. The major objection was received from Compucon who contended that the "prior coordination" approach employed for common carrier microwave stations (Part 21 of this Chapter) should be followed for private operational-fixed stations. Comments from AAR, API, and UTC disputed Compucon's view in this regard. UTC states:

> Compucon objects to the establishment of interference criteria and suggests 'precoordination' as presently exercised in the common carrier services. UTC is vigorously opposed to the concept as advanced by Compucon and feels very strongly that there do have to be interference criteria as a base point to allow engineering on a common basis by all of the eligibles, their equipment suppliers and contract and frequency allocation/protection services. There are a number of significant differences between common carrier users and users in the proposed private operational-fixed microwave service which are the basis for UTC's concern over Compucon's proposal and also the basis for UTC's urging for the establishment of interference criteria. For example, for any given installation the common carriers have a very limited number of other users with which to coordinate. Although they may also have congestion problems and may also have difficult coordination problems, the number of other users they have to deal with at each site is extremely small compared to most private systems. For a given coordination in the common carrier service may require contact with one or two other users the same coordination in the private service may require contact with ten to fifteen users. Also, while in the common carrier services in most cases you are dealing with skilled engineers on both sides, this is not the case necessarily with respect to all private users. In many cases, manufacturers representatives whose basic interest is selling equipment would be the 'engineering representatives' of some of the smaller or newer business oriented users. Specific criteria defining what is considered interference, as proposed, is required to give those diverse groups a common goal toward which they can engineer their systems.

26. UTC's views expressed the significant points. It is simply unrealistic to expect the measure of cooperation and the expertise of common carrier users to exist in the private services. Thus, as Compucon itself acknowledges, for the private services "the ready availability of specified interference criteria greatly simplifies the frequency selection procedures." Nor do we find any merit in Compucon's argument that this procedure results in "too many inflexible rules in an area where flexibility could greatly enhance the utilization of the spectrum * * * by allowing users themselves to set their own standards." To the contrary, in § 94.15(b), it has been provided that users may agree between

[3] According to the Commission's records, there are only three such systems authorized in the 952 MHz band. They are licensed to American District Telegraph Co. in New York, Missouri Valley Machinery Co. in Nebraska, and Pacific Fire Extinguisher Co. in California.

themselves to values of protection less than those we have specified.

27. Compucon also challenges the rules for use of EIA's methods for calculations of C/I ratios. Here Compucon states:

> Based upon Compucon's experience in assigning frequencies for various radio types, it has become apparent that portions of EIA Bulletin 10, specifically those criteria regarding adjacent channel cases, are not widely accepted within the industry . . . Compucon's proposal would not preclude applicants from utilizing the criteria set forth in EIA Bulletin 10. However, the alternative approach suggested by Compucon would not require applicants to use exclusively the interference criteria set forth in the Bulletin.

Arizona and Colorado expressed a similar concern as to reliance on one source for procedural guidance. Colorado recommends that the Institute of Electrical and Electronics Engineers (IEEE), or the American National Standards Institute (ANSI), and the Commission could develop suitable instrumentation methods for these purposes. This is so, and we believe that in light of the changing technology and equipment for microwave operations, it is desirable to allow greater flexibility as to the methodology to be employed for calculating interference levels. Therefore, the rule we are adopting will not require the use of any one method for determining C/I ratios, but will permit applicants to devise any technique or to use any procedure developed by any recognized authority which has been demonstrated to be capable of producing reliable data for interference calculations.

28. UTC raises an issue with respect to requirements for applicants to make an interference analysis under the protection criteria of § 94.63 in connection with any application for modification of station license submitted under § 94.45. They ask us to require such analysis only for modifications that change location, or where there is an increase in effective radiated power of more than 3 dB. The Commission agrees that there are required station modifications that do not increase interference potential and for which an interference analysis need not be conducted. Accordingly, we have added a paragraph (e) to § 94.63 to provide appropriate exceptions to the requirement for interference analysis for modifications when the purpose is to substitute transmitting equipment having greater stability; or when there is a decrease in antenna primary lobe beamwidth which is accompanied by a corresponding decrease in antenna input power so as to not increase the effective radiated power in excess of a 2 to 1 ratio.

29. Numerous language changes that clarify certain of the proposed interference protection criteria provisions were recommended by API, EIA, and UTC, or otherwise appear to be required. These changes do not warrant discussion but may be noted by comparison of the proposed § 94.63 with the provisions being adopted.

30. In addition, new provisions have been added to § 94.63 in order to cover interference protection requirements for other services in shared frequency bands. As we have noted, by action in Docket 18920, frequency bands between 18,000 MHz and 40,000 MHz have been allocated for regular assignments subject to sharing between operational-fixed users and licensees in the Domestic Public Radio Services. A requirement for such sharing is that applicants in either service meet the interference protection standards for both categories of users. Thus, applicants for operational-fixed facilities in these bands must comply with the provisions of § 94.63, as regards interference protection criteria with respect to other operational-fixed licensees, and must also follow the "prior coordination" requirements of Part 21 as regards licensees in the Domestic Public Radio Services. This requirement is set forth in paragraph (a) of adopted § 94.63. Paragraph (a) also provides similar requirements for sharing with the Communication-Satellite Service (Part 25) in the bands 2655–2690 MHz or 12,500–12,700 MHz.

31. *Frequency Pairing Plans:* Section 94.65 sets forth proposals to adopt channel pairing plan. Except for the 952 MHz band, there were no frequency pairing plans in prior private microwave rules even though informal pairing plans have been followed for several years. Thus, formalizing these plans had been long overdue. We also invited comments as to how the 6525–6575 band, if reallocated, and the 6575–6875 MHz band should be channelized. Many excellent plans were submitted. Some included proposals to adopt pairing plans providing for two or more maximum bandwidths in a band. (Proposed § 94.71 lists the authorized bandwidth emissions for each band). There are advantages to this concept. It would provide additional usable frequencies and a greater choice of bandwidths in complying with our policy regarding assignment of frequencies. The disadvantage is the increased complexity of performing interference calculations. However, calculations can still be performed reasonably if no more than two maximum bandwidths are permitted in any one band. Accordingly, we are adopting channeling plans essentially as proposed with regard to the frequencies involved since we felt constrained to adhere to the original frequencies as assigned on an informal basis over many years. At the same time, we have determined that the channeling plans being adopted for bands below 13 GHz should provide multiple bandwidths. The bandwidths being adopted thus either double or halve the bandwidths already proposed, and frequencies are derived in accord with this formula. The discussion of the actual bandwidths being adopted is contained in paragraph 35, infra. In the 13 GHz band and in bands re-allocated in Docket 18920, we have not provided for channeling plans at this time since we wish to allow full scope for development of these new frequencies. Maximum bandwidths for each of these bands above 13 GHz are shown in § 94.71.

32. *Frequency Tolerance:* Comments received generally supported our proposal to tighten frequency tolerances for operational-fixed stations (proposed § 94.67). California Microwave commented that "the frequency tolerances outlined in § 94.67 are available now on a production line basis from California Microwave, Inc. and other component suppliers in the microwave industry." The Electronic Industries Association, representative of a number of microwave system suppliers, also said that it "is in agreement with the Commission's proposal for tightening tolerances . . .", and Collins commented stating that our proposed tolerances "are representative of current equipment capabilities." APCO and CPRA, while not opposed to the proposal, expressed concern as to the "grandfathering dates." (See, however, our discussion in paragraph 17, supra.) API and Washington State Patrol urged relaxing tolerances in the 1850–1990 MHz band. CSIFAC proposed a "maximum channel bandwidth and the emission level outside of the assigned channel . . ." IMC concurs that tolerances should be tightened for FM–FDM systems but argued that "there are no sound engineering reasons for imposing this tolerance on all systems using the 12.2–12.7 GHz band at this time." Both the CSIFAC and the IMC comments are directed toward other than FM–FDM systems.

33. We recognize the validity of some aspects of the CSIFAC and IMC arguments, but we believe they do not adequately consider the fact that the majority of the 10,000 presently licensed private microwave stations employ frequency modulation. Also, in implementing protection criteria, frequency stability is a critical factor. As we stated in our proposal, we favored tightening tolerances as an indirect means of obtaining tightened stabilities but neither CSIFAC nor IMC have indicated how the interference criteria in this regard could otherwise be met. Therefore, while we will consider specific proposals to improve the state-of-the-art, we cannot accept these counter-proposals in the absence of a showing of alternate means of providing existing licensees adequate interference protection. Regarding the suggestions to relax the tolerance in the 1850–1990 MHz band, this may have had some merit, but with our revised plan of making available some narower channels in this band the tolerance proposed became even more necessary. Consequently, we are adopting frequency tolerances as proposed modified only to include standards for the 13 GHz band, and above 13 GHz in accordance with the decisions in Docket 18920.

34. *Types of Emission:* The proposal on emissions would allow wide choice of type of emissions but would permit the Commission to require technical changes in the event the method of modulation is unduly wasteful of emission bandwidth. This latter provision was not well received. API, Collins, Colorado, EIA, and UTC argued to the effect that the type of modulation should be left up to the user,

even when it may not be the most efficient method, in the interest of permitting full scope for development of new techniques which could ultimately lead to improvement of the state-of-the-art. This appears to the Commission to be a reasonable approach and we have deleted the provision as to requiring technical changes as had been proposed in paragraph (b). It is noted, however, that in accordance with the frequency assignment policy adopted in § 94.15 requiring applicants to select the band where the assignable bandwidth is most consistent with the communications requirement, the Commission intends to review proposed modulation methods to determine the most suitable bandwidth and band for the techniques selected. We will not, under this policy, permit access to bands which provide bandwidth in excess to that required under generally acceptable good engineering practices for the modulation techniques to be employed.

35. *Emission Bandwidth:* Proposed § 94.71 sets forth emission limitations. Paragraph (b) deals with bandwidth proposals. In the 1850–1990 MHz band, we proposed increasing bandwidth from 8 MHz to 10 MHz in keeping with the 10 MHz channel spacing. This was widely supported, although California recommends that the increased bandwidth be allowed only upon a showing of need in order to mitigate "potential for interference in frequency congested areas." The Commission does not foresee this problem as a likely development and we have adopted the proposal without change. As noted, a number of the comments suggested multiple-bandwidths for bands below 13,000 MHz, including the 1850–1990 MHz band. For the reasons discussed with respect to the rules being adopted for channeling plans (Paragraph 33, supra) we are modifying authorized bandwidths in this regard. The rules provide the bandwidths 5 MHz or 10 MHz at 1850–1990 MHz and 6525–6875 MHz, and 800 KHz or 1600 KHz at 2130–2150 MHz and 2180–2200 MHz.

36. In the 952–960 MHz band, we received suggestions for bandwidths up to 500 KHz to accommodate up to 24 channels. The problem at 952–960 MHz is that this has been the only practicable microwave band for conducting remote control of base stations (control repeaters) in the land-mobile services. There is already a preponderance of users in this band employing just one or two voice channels for this purpose and it would be wasteful of spectrum to provide only bandwidths of hundreds of kilohertz for users requiring only 25 KHz to 50 KHz. Consequently, we have added to the proposed 100 KHz bandwidth a provision for 50 KHz assignments. Nevertheless, we consider arguments in the comments from AAR, API, and Granger for other bandwidth to contain merit. We are aware that 952–960 MHz is relatively uncongested and that there are economic and practical advantages to use of this band to meet requirements for up to about 12 channels. In the last two years, we have recognized these needs on a case-by-case basis by authorizing a number of systems to use bandwidths up to 200 KHz. We have concluded, therefore, that provision for an additional bandwidth is appropriate. For 952–960 MHz, a third bandwidth has been adopted to allow assignments on six frequency pairs for 200 KHz. The specific frequencies available for assignments with this 953.95, 957.95/954.35, 958.35/954.75, 958.-953.95, 957.95/954.35, 958.35/954.75, 958.-75/955.15, and 959.15/955.55 MHz.

37. Other changes being adopted include the bandwidth for 2686–2689 MHz which is corrected from the proposed 3 KHz to 125 KHz in accordance with § 74.939(d) of the rules. In another proposal, we had imposed a limit of 6 MHz bandwidth below 12 GHz for video transmissions that are not part of a multiple-hop tandem system. This limitation is no longer required and it has been deleted in view of the exclusion of wide-band video operations, as discussed with regard to the frequency assignment policies in Section 94.15. There had been no maximum bandwidth proposed for bands above 13,000 MHz. However, the adopted rules now specify bandwidths in the 13 GHz band, and in bands above 13 GHz in keeping with decisions in Docket 18920.

38. *Power Limitations:* Comments received in connection with our proposed power limitations in § 94.73 were directed at both the maximum allowable effective radiated power and the maximum transmitter power output. Our philosophy in limiting ERP was to limit the maximum signal radiated and hence, the interference potential of a station, while making it high enough to accommodate long paths and high reliability requirements. Our reason for specifying transmitter power output was only to satisfy type acceptance requirements.

39. Comments filed by APCO, API, and Cardion contend the proposed ERP's are excessive to realistic user requirements and, on reevaluation, the Commission agrees. We have reduced the maximum allowable ERP's by 5 to 6 dB. We do not agree with Cardion's suggestion to limit ERP to a function of path length, path fade margin, etc. To do so we feel would place an undue burden on applicants and the Commission. Nor do we accept Cardion's recommendation that the Commission specify path fade margin, namely system reliability, for this would inject us into the midst of designing systems and it is our practice to specify the limits of what can be done, not how to do it. Nevertheless, we share Cardion's concern and we will continue to monitor applications to prevent the use of excessive power.

40. We are rejecting CSIFAC's suggestion to increase the power output of outlying stations from 20 to 100 watts. This request has not been justified. We believe that the maximum 70 dBm ERP allowed should provide satisfactory service. We have also amended our table to include the 13 GHz band and the added frequency bands above the 13 GHz band, and have incorporated power limitations developed in Dockets 19311[4] and 19547.

41. *Antenna Limitations:* Proposed § 94.75 set forth antenna standards. In the notice, the Commission proposed two categories of antennas—Category A and Category B. Category A standards would provide for antennas with high front-to-back and front-to-side discrimination to permit more systems to be accommodated in areas with high concentration of microwave stations. For other areas, it was proposed that Category B antenna standards be met until such time as congestion might require upgrading to Category A. Comments from ARINC, Cardion, Collins, and Granger note their concern with the high cost of Category A antennas and they request relaxation of the proposed standards. The Commission is aware that there is a significant cost factor in meeting the higher antenna standards. However, in many areas, particularly those involving low-density microwave operations, Category B antennas will probably afford acceptable performance. In areas requiring Category A antennas, the paramount consideration is that the standards must meet the interference protection criteria in the interests of optimizing efficient utilization of available spectrum. The proposed standards are found to achieve this objective. Therefore, although we have made minor modifications to the proposed antenna standards in accordance with recommendations from EIA, the standards are determined to be a necessary element of the essential requirements for private operational-fixed stations and the proposed provisions are being finalized herein. In adopting these standards, it appears necessary to clarify our implementation requirements. It is intended that microwave stations licensed prior to the date these amendments become effective need not meet the requirements for either Category A or B antennas until 1985 (the "Grandfather" period, previously discussed), or until modification of station licenses requiring analysis under the interference protection criteria is requested, whichever occurs first. Thus, until 1985, new stations must afford stations now authorized the protection of a Category A or B antenna, whichever is shown to be required, but these new stations are not entitled to a reciprocal level of interference protection. For stations modified or first authorized after the effective date of these amendments, or in any event, for all systems after 1985, the requirement is that at least a Category B antenna be employed, and a Category A antenna will be required to be employed to reduce any interference received from, or caused to, any new or existing station.

[4] 39 FR 35658 (October 10, 1974), *In the Matter of Establishment of Policies Procedures for the use of digital modulation techniques in microwave radio and proposed amendments to Parts 2 and 21.* Report and Order (Docket 19311) adopted September 19, 1974 (FCC 74-985).

42. In paragraph (c) of § 94.75, we had specified that polarization of the antenna be limited to vertical or horizontal. We received a number of comments indicating that there are circumstances where polarizations other than vertical or horizontal are useful. APCO, in its comments, stated it "agrees that the antenna polarization should be specified in the authorization," but "it must be recognized that there are times when the polarization is somewhere between vertical and horizontal." Norden in its comments argued that it uses a system design which would employ polarization of 45° from vertical, and requests that our rules be amended to include this method. We have taken these comments into account and have amended our rules accordingly requiring only that the radiation be limited to linear polarization and that the angle of the polarization be specified. We have not, however, favorably considered a request from CSIFAC that we include also circularly polarized antennas since we believe these to be generally incompatible and more problem-prone with respect to a linearly-polarized fixed-station environment.

43. Periscope antenna standards raised a number of issues. We required in our proposal that periscope systems meet our antenna standards and that cross-coupling in multiple installations not exceed the front-to-back ratios for comparable antennas. However, it has not been clearly shown how interference calculations could be made in the absence of a radiation pattern envelope. The effect is that periscope antennas may not be able to meet the antenna standards. Collins commented:

> It is true that the absence of definitive data suggests exclusion of periscope antenna systems from future installations. However, there is also a lack of firm evidence that supports the case in favor of exclusion.

AAR, APCO, EIA, NAM, and UTC had a similar view. In any event, existing periscope systems will be "grandfathered" for ten years. Thus, the restriction of the rule requiring compliance with the antenna standards will apply only to new and modified systems until 1985. Also, the possibility exists that between now and 1985 someone will be able to develop data pertaining to the radiation pattern envelopes of periscope antenna systems and that such patterns will exceed the performance of the illuminating parabola. Even if they are worse, but predictable, then we may be able to accommodate the periscope system in some manner. We encourage and will cooperate in any effort to obtain solutions to this perplexing problem.

44. *Interference to Geo-Stationary Satellites:* A new Section 94.77 has been adopted to cover "antenna pointing" limitations with respect to potential interference to geo-stationary satellites. The basis for these limitations is delineated in Docket 19547 (CCIR recommendation number 406-2, Geneva 74). The limitations apply to the bands 2655–2690 MHz and 12,500–12,700 MHz and are intended to minimize the probability of harmful interference to reception onboard space stations authorized in the Fixed Satellite Service (Part 25 of this chapter.)

45. *Type Acceptance and Technical Information Filings:* In addition to previous requirements for type acceptance of microwave transmitters, we had proposed a requirement in Section 94.81 for informational filings on receivers and antennas. Our position was supported by API and UTC. AAR recommended that the FCC not incur the cost of maintaining the additional data, and EIA suggested deletion of the receiver requirement in the absence of "clear decisions on specific receiver information required." Application of the interference criteria requires that this information be available to the system designer. Absent a central source for this information, the designer may be confronted with a formidable task at a considerable expense of obtaining this data from suppliers. Suppliers in turn may face considerable expense in furnishing data to repeated requests of each designer. Thus, we remain convinced of the need for a centralized source of information. There was general support for our plans to maintain a data base and we envision that this information would become part of this file.

46. *Transmitter Measurements:* API and UTC suggest that a period for conducting required transmitter measurements be specified and they recommend annual measurements. This suggestion and other minor changes of a clarifying nature have been incorporated into adopted § 94.85.

Subpart D—Station Operating Requirements—47. *Suspension of Transmission Required:* Proposed § 94.101 requires cessation of transmissions for deviations from technical requirements. API makes the observation that this is a particularly serious burden in view of the extensive nature of most microwave systems. The Commission agrees and, although the language of the proposed rule is standardized for land mobile operations, we believe that operational-fixed microwave systems require a different approach. Accordingly, we are adopting a modified provision which requires suspension of operations only when the deviation involved results in harmful interference to other licensees and, even then, transmissions may be continued when imminent safety of life or property is involved. Of course, in any event, the licensee of the offending station is required to act promptly in effecting compliance with the rules.

48. *Posting of Station Licenses and Identification Cards:* Proposed § 94.107, which deals with requirements for posting of station authorizations and transmitter identification cards, has been adopted, but we have modified the language to conform the requirements more closely to standards set forth in the land-mobile services. This responds in major part to most of the objections received, particularly with respect to proposed paragraph (d) which we have deleted. Paragraph (d) had been intended to require that entrances to unattended stations be posted with the licensee's name and location, but this would apparently present major security problems to licensees in many instances with only minimal benefit to the Commission's enforcement effort.

Subpart E—Developmental Operations—49. *Developmental Operations:* When the rule amendments in this docket were proposed, the provisions of this Subpart applied to assignment and use of frequency bands above 13,000 MHz. As a result of the Commission's rule making action in Docket 18920, these developmental provisions now apply to frequencies in the 13 GHz band and in the 40 GHz band and above.

Conclusion. 50. In addition to the recommended changes discussed in the preceding paragraphs, the comments included numerous suggestions for modifications of the proposed rules which are of a relatively minor nature. Many of these have been incorporated into the adopted provisions, together with language changes of a clarifying or editorial nature. The specific rule amendments are set forth in the attached. The result, we believe, is a comprehensive radio service that effectively addresses the need for a structured framework that can fully and consistently meet the licensing and operational requirements for operational-fixed stations.

51. *Environmental Considerations:* There were a number of comments which suggested that we should prepare a report analyzing possible environmental effects of this rulemaking. Under the National Environmental Policy Act of 1969 (NEPA), 42 U.S.C. 4321–4327, we are required to prepare an environmental impact statement when the adoption of a rule appears to carry with it significant environmental consequences. In order to determine whether this rulemaking could have such consequences, we must examine what it involves. Essentially, this rulemaking consolidates and updates existing rules into a new rule part and establishes technical standards in order to reduce interference problems and maximize co-channel operation capabilities. UTC, however, in its comments contends that permitting business users access to the band below 12 GHz would cause the environmental consequences of an increase in microwave sites. However, any increase in microwave sites would not directly result from this rule change but would be a normal incidence of growth in the service. In any event, as we have noted, we are permitting only limited access by business users to bands below 12 GHz and what would be expected to occur is a shift of narrowband business operations from the higher microwave bands. This has no environmental significance except perhaps we would see a reduction in the number of stations needed to operate a microwave system below 12 GHz than might be required in this band where propagational factors sometimes mandate the use of additional stations for assuring reliability of operations. Therefore, we have concluded that this proceeding will not have a significant impact on the environment and,

consequently, an enviromental impact statement is not required. In any case, applicants under this Part will be required to provide environmental information as specified in §§ 1.1305 and 1.1311 of our rules so that the potential environmental consequences of proposed facilities will be carefully examined on a case-by-case basis.

52. In consideration of the foregoing, the Commission finds that amendment of the rules to establish Part 94, the Private Operational-Fixed Microwave Service, is in the public interest and should be approved. Authority for these rule amendments is contained in sections 4(i) and 303(r) of the Communications Act of 1934, as amended.

53. *Accordingly, it is ordered,* That effective August 1, 1975, Parts 1, 2, 81, 87, 89, 91, and 93 of the Commission's rules are amended, and new Part 94 is added in the Commission's rules as set forth below. *It is further ordered,* That this proceeding is terminated.

(Secs. 4, 303, 48 Stat., as amended, 1066, 1082; 47 U.S.C. 154, 303.)

Adopted: April 23, 1975.

Released: May 6, 1975.

FEDERAL COMMUNICATIONS COMMISSION,
[SEAL] VINCENT J. MULLINS,
Secretary.

Parts 1, 2, 81, 87, 89, 91, and 93 of Chapter I of Title 47 of the Code of Federal Regulations is amended as follows:

PART 1—PRACTICE AND PROCEDURE

1. Section 1.932 is revised to read as follows:

§ 1.932 Time in which station must be placed in operation.

For operational-fixed stations authorized to operate on frequencies above 952 MHz, the authorized station must be placed in operation within twelve months from the date of grant or the authorization shall be invalid and must be returned to the Commission for cancellation. For all other stations, the authorized station must be placed in operation within eight months from the date of grant or the authorization shall be invalid and must be returned to the Commission for cancellation.

PART 2—FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS

2. In § 2.106, the Table of Frequency Allocations is amended for the band 6525–6575 MHz to read as follows:

§ 2.106 Table of frequency allocations.

Band (MHz)	Service	Class of station	Frequency (MHz)	Nature of Stations
7	8	9	10	11
• • •	• • •	• • •	• • •	• • •
6525–6575	FIXED.	Operational fixed.		
• • •	• • •	• • •	• • •	• • •

PART 81—STATIONS ON LAND IN THE MARITIME SERVICES AND ALASKA-PUBLIC FIXED STATIONS

§ 81.35 [Amended]

3. In § 81.35, paragraph (b) is deleted and designated "Reserved".

4. In § 81.42, paragraphs (a)(1) and (b)(2) are revised as follows:

§ 81.42 Application for consent to assignment of construction permit or station license or for consent to transfer of control of corporation holding same.

(a) • • •

(1) Applications for consent to voluntary assignment of a construction permit or license covering a station subject to this part shall be filed with the Commission on FCC Form 702, "Application for Consent to Assignment of Radio Station Construction Permit or License".

• • • • •

(b) • • •

(2) Within 30 days after the occurrence of such death or legal disability, application of FCC Form 702 or FCC Form 703 as the case may require, shall be filed for consent to involuntary assignment of such station permit or license or for involuntary transfer of control of such corporation to a person or entity legally qualified to succeed to the foregoing interests under the laws of the place having jurisdiction over the estate involved.

5. In § 81.133, paragraph (d) is revised as follows:

§ 81.133 Authorized bandwidth.

• • • • •

(d) The maximum bandwidth for stations operating in the frequency band 10,550–10,680 MHz is 25 MHz.

6. In § 81.137, paragraph (c) is revised as follows:

§ 81.137 Acceptability of transmitters for licensing.

• • • • •

(c) Each transmitter authorized in an operational station (other than transmitters used solely for developmental operation) must be of a type which is accepted by the Commission.

• • • • •

§ 81.141 [Reserved]

7. § 81.141 is deleted and redesignated "Reserved".

§ 81.605 [Reserved]

8. § 81.605 is deleted and redesignated "Reserved".

9. § 81.607 is revised as follows:

§ 81.607 Frequencies available for operational land and mobile stations.

The frequencies in the band 10,550–10,680 MHz are available for assignment to operational land and operational mobile stations.

PART 87—AVIATION SERVICES

§ 87.81 [Amended]

10. In § 87.31, paragraph (d) is deleted and designated "Reserved".

11. In § 87.67, paragraph (b)(2) is revised as follows:

§ 87.67 Types of emission.

• • • • •

(b) • • •

(2) The maximum bandwidth for stations operating in the frequency band 10,550 to 10,680 MHz is 25 MHz.

• • • • •

12. In § 87.77 paragraph (d)(6) is revised as follows:

§ 87.77 Acceptability of transmitters for licensing.

• • • • •

(d) • • •

(6) All equipment sought to be utilized under a license authorizing the use of frequencies in the band 10,550 to 10,680 MHz shall be type accepted if specified in an application filed after July 20, 1962, except that equipment authorized to be used prior thereto is permitted to continue to be used provided such operation does not result in harmful interference to other stations or systems which are conforming to the technical standards contained to §§ 87.63, 87.65, and 87.67.

• • • • •

§ 87.81 [Reserved]

13. § 87.81 is deleted and redesignated "Reserved".

§ 87.463 [Amended]

14. In § 87.463, paragraphs (b), (c), and (d) are deleted and designated "Reserved".

15. § 87.465 is revised as follows:

§ 87.465 Frequencies available to land and mobile stations.

The frequencies in the band 10,550 to 10,680 MHz are available for assignment to operational land and operational mobile stations.

PART 89—PUBLIC SAFETY RADIO SERVICES

16. In § 89.59(a) the introduction text is revised, and paragraph (h) deleted and designated [Reserved] to read as follows:

§ 89.59 Standard forms to be used.

(a) Except as provided in § 89.60, a separate application shall be submitted on FCC Form 400 for the following:

• • • • •

(h) [Reserved]

17. In § 89.75, paragraph (a) is revised as follows:

§ 89.75 Changes in authorized stations.

• • • • •

(a) Proposed changes which will result in operation inconsistent with any of the terms of the current authorization require that an application for modification of license be submitted to the Commission and shall be submitted on FCC Form 400, and shall be accompanied by exhibits and supplementary statements as required by § 89.63.

• • • • •

18. In § 89.101(h) the table and paragraph (i)(5) are revised, paragraph (i)(7), (8), & (19) & paragraphs (j) & (k) deleted and designated [Reserved] to read as follows:

§ 89.101 Frequencies.

* * * * *

(h) * * *

Frequency band MHz	Class of station(s)	Limitations
1427 to 1435	Base, mobile, and operational fixed.	20
2450 to 2500	Base, mobile, and radiolocation.	2, 4, 5, 6
2900 to 3100	Radiolocation	9, 10
3100 to 3300	do	16
3300 to 3500	do	13, 16
3500 to 3700	do	16
5250 to 5350	do	16
5350 to 5460	do	10, 14
5460 to 5470	do	10, 12
5470 to 5600	do	9, 10
5600 to 5650	do	10, 11
8500 to 9000	do	17
9000 to 9200	do	10, 14
9200 to 9300	do	16
9300 to 9500	do	10, 12, 15
9500 to 10,000	do	16
10,000 to 10,500	do	13, 16, 18
10,500 to 10,550	do	3, 6
10,550 to 10,680	Base and mobile	6
13,400 to 14,000	Radiolocation	16
15,700 to 17,700	do	16
24,050 to 24,250	do	16
33,400 to 36,000	do	16

* * * * *

(i) * * *

(5) This band is also available for operational-fixed stations licensed under Part 94 of this chapter.

* * * * *

(7) and (8) [Reserved]

* * * * *

(19) [Reserved]

* * * * *

(j) and (k) [Reserved]

* * * * *

19. In § 89.103, the table in paragraph (a) is revised as follows:

§ 89.103 Frequency stability.

(a) * * *

Frequency range	All fixed and base stations	All mobile stations	
		Over 3 W	3 W or less
MHz	*Percent*	*Percent*	*Percent*
Below 25	0.01	0.01	0.02
25 to 50	.002	.002	.005
50 to 450	[1] .0005	.0005	.005
450 to 470	[4] .00025	.0005	.0005
470 to 512	.00025	.0005	.0005
806 to 821	[6] .00015	.00025	.00025
851 to 866	.00015	.00025	.00025
1427 to 1435	[5] .03	.03	.03
Above 1435	([2] [8])	([2] [3])	([2] [3])

[1] Stations authorized for operation on or before December 1, 1961 in the frequency band 73.0–74.6 MHz may operate with a frequency tolerance of 0.005 percent.

[2] Radiolocation equipment using pulse modulation shall meet the following frequency tolerance: The frequency at which maximum emission occurs shall be within the authorized frequency band and shall not be closer than 1.5/T MHz to the upper and lower limits of the authorized frequency band where T is the pulse duration in microseconds. For other radiolocation equipment, tolerances will be specified in the station authorization.

[3] The frequency tolerance for base and mobile stations will be specified in the station authorization.

[4] Operational-fixed stations controlling mobile relay stations, through the use of the associated mobile frequency, may operate with a frequency tolerance of 0.0005 percent.

[5] For fixed stations with a power above 200 watts, the frequency tolerance is 0.01 percent if the necessary bandwidth of the emission does not exceed 3 kHz. For fixed station transmitters with a power of 200 watts or less and using time division multiplex, the frequency tolerance may be increased to 0.05 percent.

[6] For control stations, the frequency stability is 0.00025 percent.

* * * * *

20. In § 89.107, a new paragraph (e) is added as follows:

§ 89.107 Emission limitations.

* * * * *

(e) The maximum authorized bandwidth of emission will be 25 MHz in the frequency band 10,550–10,680 MHz and 50 MHz in the frequency bands above 16,000 MHz.

21. In § 89.111, the table in paragraph (b) is revised as follows:

§ 89.111 Power and antenna height.

(b) * * *

Frequency range MHz	Maximum plate power input to the final radio frequency stage (watts)	Maximum effective radiated power (watts)
1.3 to 3	2,000	
3 to 25	1,000	
25 to 100	500	
100 to 470	600	
470 to 512		1,000
806 to 821	([3])	([3])
851 to 866	([3])	([3])
2450 to 2500	12	
2500 to 10,550	([1])	
10,550 to 10,680	5	
Above 10,680	([1])	

[1] To be specified in the station authorization.

[2] For power limitations see § 89.651.

[3] The output power of a transmitter on any authorized frequency in this band shall not exceed 2000 watts (33 dBw).

* * * * *

22. In § 89.117, paragraph (c) is revised as follows:

§ 89.117 Acceptability of transmitters for licensing.

* * * * *

(c) Transmitters to be operated in any of the frequency bands between 1427 and 10,680 MHz, except the 8400–8500 MHz band, authorized under this part shall be type accepted if specified in an application filed after July 20, 1962, except that equipment authorized prior thereto may continue to be used provided such operation does not result in harmful interference to other stations or systems which are conforming to the appropriate technical standard contained in this part.

§ 89.121 [Reserved]

23. § 89.121 is deleted and designated "Reserved".

PART 91—INDUSTRIAL RADIO SERVICES

24. In § 91.56 the introductory text of paragraph (a) is revised and paragraph (h) is deleted and designated [Reserved] to read as follows:

§ 91.56 Standard forms to be used.

(a) Except as provided in § 91.57 a separate application shall be submitted on FCC Form 400 for the following:

* * * * *

(h) [Reserved]

25. In § 91.64 paragraph (a) is revised as follows:

§ 91.64 Changes in authorized stations.

(a) Proposed changes which will result in operation inconsistent with any of the terms of the current authorization require that an application for modification of license be submitted to the Commission and shall be on FCC Form 400 and shall be accompanied by exhibits and supplementary statements as required by § 91.58.

* * * * *

26. In § 91.102, the table in paragraph (a) is revised as follows:

§ 91.102 Frequency stability.

(a) * * *

Frequency range	Transmitter (input) power			
	Fixed and base stations		Mobile stations	
	Over 300 W	300 W or less	Over 3 W	3 W or less
MHz	*Percent*	*Percent*	*Percent*	*Percent*
Below 25 [1]	0.005	0.01	0.01	0.02
25 to 50	.002	.002	.002	.005
50 to 450	[2] .0005	.0005	.0005	.005
450 to 470	[5] .00025	[6] .00025	.0005	.0005
470 to 512	.00025	.00025	.0005	.0005
806 to 821	[7] .00015	[7] .00015	.00025	.00025
851 to 866	.00015	.00015	.00025	.00025
1427 to 1435	[8] .03	[8] .03	.03	.03
Above 1435	([3] [4])	([3] [4])	([3] [4])	([3] [4])

[1] Industrial Radiolocation Service stations operating in the frequency bands 70–90 kHz and 110–130 kHz will be required to maintain the carrier frequency of each authorized transmitter within .01 percent of the assigned frequency. Industrial Radiolocation Service stations operating in frequency bands above 130 kHz must comply with the tolerance requirements indicated in the column for fixed and base stations in this table.

[2] Stations authorized for operation on or before December 1, 1961 in the frequency band 73.0–74.6 MHz may operate with a frequency tolerance of 0.005 percent.

[3] The frequency tolerance for base and mobile stations authorized to operate in these bands will be specified in the station authorizations.

[4] Radar stations in the Industrial Radiolocation Service using pulse modulation shall meet the following frequency tolerances: The frequency at which maximum emission occurs shall be within the authorized frequency band and shall not be closer than 1.5/T MHz to the upper and lower limits of the authorized frequency band where T is the pulse duration in microseconds. For other equipment, tolerances will be specified in the station authorization.

[5] Operational fixed stations controlling mobile relay stations, through use of the associated mobile frequency, may operate with a frequency tolerance of 0.0005 percent.

[6] For fixed stations with power above 200 watts, the frequency tolerance is .01 percent if the necessary bandwidth does not exceed 3 kHz. For fixed station transmitters with a power of 200 watts or less and using time division multiplex the frequency tolerance may be increased to .05 percent.

[7] For control stations, the frequency stability is .00025 percent.

27. In § 91.104, a new paragraph (e) is added as follows:

§ 91.104 Emission limitations.

* * * * *

(e) The maximum authorized bandwidth of emissions will be 25 MHz in the frequency band 10,550–10,680 MHz and 50 MHz in the frequency bands above 16000 MHz.

28. In § 91.106, the table in paragraph (b) is revised as follows:

§ 91.106 Power and antenna height.

* * * * *

(b) * * *

Frequency range (MHz)	Maximum plate power input to the final radio frequency stage (watts)	Maximum effective radiated power (watts)
1.6 to 6	2,000	
25 to 100	500	
100 to 216	600	
216 to 220	(1)	(1)
220 to 470	600	
470 to 512		1,000
806 to 821	(2)	(2)
851 to 866	(3)	(2)
2450 to 2500	12	
2500 to 10,550	(1)	
10,550 to 10,680	5	
Above 10,680	(1)	

[1] To be specified in the station authorization.
[2] For power limitations see § 89.651.
[3] The output power of a transmitter on any authorized frequency in this service should not exceed 2000 watts (33 dBw).

* * * * *

§ 91.111 [Reserved]

29. § 91.111 is deleted and redesignated "Reserved".

30. In § 91.254(a) the table is amended and paragraphs (b) (13), (14), (15), & (16) are deleted and designated [Reserved] to read as follows:

§ 91.254 Frequencies available.

(a) * * *

POWER RADIO SERVICE FREQUENCY TABLE

Frequency or band	Class of station(s)	Limitations
* * *	* * *	* * *
470 to 512	Base and mobile	25
1427 to 1435	Base, mobile, and operational fixed.	35
2450 to 2500	Base and mobile	2
8400 to 8500	do	1
10,550 to 10,680	do	
* * *	* * *	* * *

(b) * * *

(13) Through (16) [Reserved]

* * * * *

§ 91.255 [Amended]

31. In § 91.255, paragraph (c) is deleted and designated "Reserved."

32. In § 91.304(a) the table is amended, and paragraph (b) (17), (18), (19) & (20) are deleted and designated [Reserved] to read as follows:

§ 91.304 Frequencies available.

(a) * * *

PETROLEUM RADIO SERVICE FREQUENCY TABLE

Frequency or band	Class of Station(s)	Limitations
* * *	* * *	* * *
470 to 512	Base and mobile	25
1427 to 1435	Base, mobile, and operational fixed.	37
2450 to 2500	Base or mobile	13
8400 to 8500	do	14
10,550 to 10,680	do	

* * * * *

(b) * * *

(17) Through (20) [Reserved]

* * * * *

§ 91.305 [Amended]

33. In § 91.305, paragraph (c) is deleted and designated "Reserved".

34. In § 91.354(a) the table is amended and subparagraphs (b) (17), (18), (19) & (20) are deleted and designated [Reserved] to read as follows:

§ 91.354 Frequencies available.

(a) * * *

FOREST PRODUCTS RADIO SERVICE FREQUENCY TABLE

Frequency or band	Class of station(s)	Limitations
* * *	* * *	* * *
470 to 512	Base and mobile	27
1427 to 1435	Base, mobile, and operational fixed.	35
2450 to 2500	Base or mobile	14
8400 to 8500	do	15
10,550 to 10,680	do	

* * * * *

(b) * * *

(17) through (20) [Reserved]

* * * * *

§ 91.355 [Amended]

35. In § 91.355, paragraph (c) is deleted and designated "Reserved".

36. In § 91.404(a) the table is amended and subparagraphs (b) (8), (9), (10) and (11) are deleted and designated [Reserved] as follows:

§ 91.404 Frequencies available.

(a) * * *

MOTION PICTURE RADIO SERVICE FREQUENCY TABLE

Frequency or band	Class of station(s)	Limitations
* * *	* * *	* * *
173.375	do	4
1427 to 1435	Base, mobile and operational fixed.	12
2450 to 2500	Base or mobile	6
8400 to 8500	do	7
10,550 to 10,680	do	

* * * * *

§ 91.405 [Amended]

37. In § 91.405, paragarph (c) is deleted and designated "Reserved".

38. In § 91.454(a) the table is amended and subparagraphs (b) (6), (7), (8) & (9) deleted and designated [Reserved] to read as follows:

§ 91.454 Frequencies available.

(a) * * *

RELAY PRESS RADIO SERVICE FREQUENCY TABLE

Frequency or band	Class of station(s)	Limitations
* * *	* * *	* * *
458.000	do	10, 12
1427 to 1435	Base, mobile, and operational fixed.	13
2450 to 2500	Base or mobile	4
8400 to 8500	do	5
10,550 to 10,680	do	

* * * * *

(b) * * *

(6) through (9) [Reserved]

* * * * *

§ 91.455 [Amended]

39. In § 91.455, paragraph (c) is deleted and designated "Reserved".

40. In § 91.504(a) the table is revised and subparagraphs (b) (15), (16), (17), & (18) are deleted and designated [Reserved] as follows:

§ 91.504 Frequencies available.

(a) * * *

SPECIAL INDUSTRIAL RADIO SERVICE FREQUENCY TABLE

Frequency or band	Class of station(s)	General reference	Limitations
* * *	* * *	* * *	* * *
470–512	Base and mobile	do	31
1427–1435	Base, mobile, and operational fixed	Microwave fixed	36
2450–2500	Base or mobile	2450 MHz ISM	2
8400–8500	do	Microwave developmental	1
10, 550–10, 680	do	Microwave mobile	

* * * * *

(b) * * *

(15) through (18) [Reserved]

* * * * *

§ 91.552 [Amended]

41. In § 91.552, paragraph (e) is deleted and designated "Reserved".

42. In § 91.554(a) the table is amended, and subparagraphs (b) (18), (19), (22) & (23) are deleted and designated [Reserved] to read as follows:

§ 91.554 Frequencies available.

(a) * * *

BUSINESS RADIO SERVICE FREQUENCY TABLE

Frequency or band	Class of station(s)	General reference	Limitations
***	***	***	***
470–512	Base and mobile	do	46
1427–1435	Base, mobile, and operational fixed	Telemetry	48
10, 550–10, 680	Base or mobile	Microwave mobile	51

* * * * *

(b) * * *

(18) and (19) [Reserved].

(22) and (23) [Reserved]

§ 91.566 [Amended]

* * * * *

43. In § 91.556, paragraph (b) is deleted and designated "Reserved."

44. In § 91.730(a) the table is amended and subparagraphs (b) (9), (10), (11), & (12) deleted and designated [Reserved] as follows:

§ 91.730 Frequencies available.

(a) * * *

MANUFACTURERS RADIO SERVICE FREQUENCY TABLE

Frequency or band	Class of station(s)	Limitations
* * *	* * *	* * *
470 to 512	Base and mobile	20
1427 to 1435	Base, mobile, and operational fixed.	22
2450 to 2500	Base or mobile	2
8400 to 8500	do	5
10,550 to 10,680	do	

* * * * *

(b) * * *

(9) through (12) [Reserved]

* * * * *

§ 91.731 [Amended]

45. § 91.731, is deleted and redesignated "Reserved."

46. In § 91.754(a) the table is amended and subparagraphs (b)(6), (7), (8) & (9) deleted and design [Reserved] to read as follows:

§ 91.754 Frequencies available.

(a) * * *

TELEPHONE MAINTENANCE RADIO SERVICE

Frequency or band	Class of station(s)	Limitations
* * *	* * *	* * *
470 to 512	Base and mobile	17
1427 to 1435	Base, mobile, and operational fixed.	18
2450 to 2500	Base or mobile	2
8400 to 8500	do	5
10,550 to 10,680	do	

* * * * *

(b) * * *

(6) through (9) [Reserved]

* * * * *

§ 91.755 [Reserved]

47. § 91.755, is deleted and redesignated "Reserved".

PART 93—LAND TRANSPORTATION RADIO SERVICES

48. In § 93.56, the introductory text of paragraph (a) is revised, and paragraph (h) is deleted and designated [Reserved] to read as follows:

§ 93.56 Standard forms to be used.

(a) Except as provided in § 93.57, a separate application shall be submitted on FCC Form 400 for the following:

* * * * *

(h) [Reserved]

49. In § 93.64, paragraph (a) is amended as follows:

§ 93.64 Changes in authorized stations.

* * * * *

(a) Proposed changes which will result in operation inconsistent with any of the terms of the current authorization require that an application for modification of the license be submitted to the Commission and shall be on FCC Form 400 and shall be accompanied by exhibits and supplementary statements as required by § 93.58.

* * * * *

50. In § 93.102, the table in paragraph (a) is revised as follows:

§ 93.102 Frequency stability.

(a) * * *

Frequency range	All fixed and base stations	All mobile stations	
		Over 3 W	3 W or less
MHz	*Percent*	*Percent*	*Percent*
Below 25	0.01	0.01	0.02
25 to 50	.002	.002	.005
50 to 450	[1] .0005	.0005	.005
450 to 470	[2] [4] .00025	.0005	[3] .0005
470 to 512	.00025	.0005	.0005
806 to 821	[6] .00015	.00025	.00025
851 to 866	.00015	.00025	.00025
1427 to 1435	[5] .03	.03	.03
Above 1435	([7])	([7])	([7])

[1] Stations authorized for operation on or before December 1, 1961 in the frequency band 73.0–74.6 MHz may operate with a frequency tolerance of 0.005 percent.

[2] A frequency tolerance of 0.0005 percent is permitted in the Railroad Radio Service for base stations operating on the frequencies 452.925, 452.950, 457.925, and 457.950 MHz used for remote control purposes in railroad yard and terminal areas.

[3] Radiolocation equipment using pulse modulation shall meet the following frequency tolerance: The frequency at which maximum emission occurs shall be within the authorized frequency band and shall not be closer than 1.5/T MHz to the upper and lower limits of the authorized frequency band where T is the pulse duration in microseconds. For other radiolocation equipment, tolerances will be specified in the station authorization.

[4] Operational fixed stations controlling mobile relay stations, through the use of the associated mobile frequency, may operate with a frequency tolerance of 0.0005 percent.

[5] For fixed stations with a power above 200 watts, the frequency tolerance is 0.01 percent if the necessary bandwidth of the emission does not exceed 3 kHz. For fixed station transmitters with a power of 200 watts or and using time division multiplex, the frequency tolerance may be increased to 0.05 percent.

[6] For control stations, the frequency stability is 0.00025 percent.

[7] The frequency tolerance for base and mobile stations will be specified in the station.

* * * * *

51. In § 93.104, a new paragraph (e) is added as follows:

§ 93.104 Emission limitations.

* * * * *

(e) The maximum authorized bandwidth of emission will be 25 MHz in the frequency band 10,550–10,680 MHz and 50 MHz in the frequency bands above 16,000 MHz.

52. In § 93.106, the table in paragraph (b) is revised as follows:

§ 93.106 Power and antenna height.

* * * * *

(b) * * *

Frequency range (MHz)	Maximum plate power input to the final radio frequency range (watts)	Maximum effective radiated power (watts)
30 to 100	500	
100 to 470	[1] 120	
470 to 512		1,000
806 to 821		[4]
851 to 866	[5]	[4]
2450 to 2500	12	
2500 to 10,500	[6]	
10,550 to 10,680	5	
Above 10,680	[6]	

[1] In the frequency band 450–470 MHz maximum plate power input in excess of 120 watts but not in excess of 600 watts may be authorized in accordance with the provision of Subpart E of this part, upon submission of the required showings.

[2] [Reserved]

[3] [Reserved]

[4] For power limitations, see § 89.651.

[5] The output power of a transmitter on any authorized frequency in this service shall not exceed 2000 watts (33 dBw).

[6] To be specified in the station authorization.

* * * * *

§ 93.111 [Reserved]

53. § 93.111 is deleted and redesignated "Reserved".

54. In § 93.112(a) the table and paragraph (b)(5) are revised, and subparagraphs (b) (15), (16) & (20), and paragraphs (c) & (d) deleted and designated [Reserved] to read as follows:

§ 93.112 Availability of microwave frequencies.

(a) * * *

Frequency band	Class of Station(s)	Limitations
MHz		
1427 to 1435	Base, mobile, and operational fixed.	21
2450 to 2500	Base, mobile, and fixed radiolocation.	2, 4, 5, 6, 7
2900 to 3100	Radiolocation	8, 14
3100 to 3300	do	17
3300 to 3500	do	11, 17
3500 to 3700	do	17
5250 to 5350	do	17
5350 to 5460	do	8, 12
5460 to 5470	do	8, 10
5470 to 5600	do	8, 14
5600 to 5650	do	8, 9
8500 to 9000	Radiolocation	18
9000 to 9200	do	8, 12
9200 to 9300	do	17
9300 to 9500	do	8, 10, 13
9500 to 10,000	do	17
10,000 to 10,500	do	11, 17, 19
10,500 to 10,550	do	3, 6, 7
10,550 to 10,680	Base and mobile	6
13,400 to 14,000	Radiolocation	17
15,700 to 17,700	do	17
24,050 to 24,250	Radiolocation	17
33,400 to 36,000	do	17

(b) * * *

(5) This band is also available for operational-fixed stations licensed under Part 94 of this chapter.

* * * * *

(15) and (16) [Reserved]

* * * * *

(20) [Reserved]

* * * * *

(c) [Reserved]

(d) [Reserved]

55. A new Part 94 is added to Title 47 (Parts 80–End) of the Commission's rules as follows:

PART 94—PRIVATE OPERATIONAL-FIXED MICROWAVE SERVICE

Subpart A—General Information

Sec.
94.1 Basis and Purpose.
94.3 Definitions.
94.5 Eligibility.
94.7 General Citizenship Restrictions.
94.9 Permissibility of Communications.
94.11 Points of Communication.
94.13 Interconnection of Private Operational-Fixed Microwave Stations.
94.15 Policy Governing the Assignment of Frequencies.
94.17 Cooperative Use of Stations.

Subpart B—Applications, Authorizations, and Notifications

94.23 Station Authorization Required.
94.25 Filing of Applications.
94.27 Applications and Standard Forms.
94.29 Who May Sign Applications.
94.31 Supplemental Information to be Submitted with Application.
94.33 Preliminary Processing of Applications.
94.35 Amendment or Request for Dismissal of Application.
94.37 Grant of Application without Hearing.
94.39 License Term.
94.41 Partial Grant of Applications.
94.43 Procedure for Obtaining Special Temporary Authority.
94.45 Changes in Authorized Station Requiring Modification.
94.47 Transfer and Assignment of Station Authorization.
94.49 Report of Temporary Location.
94.51 Time in which Station must be Placed in Operation.
94.53 Discontinuance of Station Operation.
94.55 Notification of Commencement or Discontinuance of Station Operation.
94.57 Continued Operation Subsequent to Modification.

Subpart C—Technical Standards

94.61 Applicability.
94.63 Interference Protection Criteria for Operational-Fixed Stations.
94.65 Frequencies.
94.67 Frequency Tolerance.
94.69 Types of Emission.
94.71 Emission and bandwidth limitations.
94.73 Power Limitations.
94.75 Antenna Limitations.
94.77 Interference to Geo-Stationary Satellites.
94.81 Type Acceptance and Technical Information Filings of Microwave Equipment.
94.83 Transmitter Control Requirements.
94.85 Transmitter Measurements.

Subpart D—Station Operating Requirements

94.101 Suspension of Transmission Required.
94.103 Operator Requirements.
94.105 Station Identification.
94.107 Posting of Station Authorization and Transmitter Identification Cards, Plates, or Signs.
94.109 Inspection of Stations and Station Records.
94.111 Inspection and Maintenance of Tower Marking and Associated Control Equipment.
94.113 Station Records.

Subpart E—Developmental Operation

94.151 Eligibility.
94.153 Showing Required.
94.155 Limitations on Use.
94.157 Frequencies Available for Assignment.
94.159 Interference.
94.161 Special Provisions.
94.163 Required Supplementary Statement.
94.165 Report of Operation.

AUTHORITY: Secs. 4, 303, 48 Stat., as amended, 1066, 1082; 47 U.S.C. 154, 303.

Subpart A—General Information

§ 94.1 Basis and purpose.

(a) The basis for the rules following in this part is the Communications Act of 1934, as amended, and applicable treaties and agreements to which the United States is a party. The rules in this part are issued pursuant to the authority contained in Title III of the Communications Act of 1934, as amended, which vests authority in the Federal Communications Commission to regulate radio transmissions and to issue licenses for radio stations.

(b) The purpose of the rules in this part is to prescribe the manner in which operational-fixed radio facilities may be licensed and operated in the microwave spectrum above 952 MHz.

§ 94.3 Definitions.

For the purpose of this part, the following definitions shall be applicable. For other definitions, refer to Part 2 of this chapter, Frequency Allocations and Radio Treaty Matters; General Rules and Regulations.

Antenna Power Input. The radio frequency peak or RMS power, as the case may be, supplied to the antenna from the antenna transmission line and its associated impedance matching network.

Control Station. An operational-fixed station, the transmissions of which are used to control automatically the emissions or operations of a radio station in the mobile services at a specified location.

Effective Radiated Power (ERP). The product of the antenna power input and the antenna power gain in a given direction over that of an isotropic radiator. For purposes of this part, ERP is expressed in decibels referenced to 1 milliwatt (dBm) in the direction of the main beam.

Fixed Relay Station. An operational-fixed station associated with one or more stations in the mobile service, established to receive radio signals directed to it and to retransmit them automatically on a fixed service frequency.

Fixed Service. A service of radio communication between specified fixed points.

Fixed Station. A station in the fixed service.

Frequency Tolerance. The maximum permissible departure with respect to the assigned frequency of the corresponding characteristic frequency of an emission. For purposes of this part, the frequency tolerance is expressed as a percentage of the assigned frequency.

Long Haul System. A microwave system licensed under this part in which the longest radio circuit of tandem radio paths exceeds 250 miles.

Microwave. For purposes of this part, frequencies above 952 MHz.

Necessary Bandwidth. For a given class of emission, the minimum value of the occupied bandwidth sufficient to insure the transmission of information at a rate and with the quality required for the system employed, under specified conditions. Emissions useful for the good functioning of the receiving equipment as, for example, the emission corresponding to the carrier of reduced carrier systems, shall be included in the necessary bandwidth. The necessary bandwidth may be determined by methods outlined in § 2.202 of this chapter.

Occupied Bandwidth. The frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission. In some cases, for example, multichannel frequency-division systems, the percentage 0.5 percent may lead to certain difficulties in the practical application of the definitions of occupied and necessary bandwidth; in such cases a different percentage may prove useful.

Operational-fixed Station. A fixed station not open to public correspondence, operated by and for the sole use of those persons or agencies operating their own radiocommunication facilities. This term includes all stations licensed in the fixed service under this part.

Passive Repeater. A passive antenna element or elements, located to reflect radiation from or redirect radiation to a directional transmitting and/or receiving antenna in a horizontal or near horizontal plane to a horizontal or near horizontal plane.

Periscope Antenna System. An antenna system which involves the use of a passive reflector to deflect radiation from or to a directional transmitting and/or receiving antenna which is oriented vertically or near vertically.

Person. An individual, partnership, association, joint stock company, trust, or corporation.

Rated Power Output. The maximum radio frequency power output capability (peak or average power) of a transmitter, under optimum conditions of adjustment and operation, specified by its manufacturer.

Short Haul System. A microwave system licensed under this part in which the longest radio circuit of tandem radio paths does not exceed 250 miles.

§ 94.5 Eligibility.

Any person, or any governmental entity or agency, eligible for licensing in a radio service under Parts 81, 87, 89, 91, and 93, for private operational-fixed communications related to activities for which licensing is available in such service, is eligible to hold an authorization under this part.

§ 94.7 General citizenship restrictions.

A station license may not be granted to or held by a foreign government or a representative of a foreign government.

§ 94.9 Permissibility of communications.

(a) Except as provided in paragraph (b) of this section, stations in this radio service are authorized to transmit:

(1) The licensee's own communications; and also those of its parent corporation, or of another subsidiary of the same parent, or of its own subsidiary where the party to be served is regularly engaged in any of the activities which constitute the basis for eligibility to use the frequencies assigned, provided that

the radio communications service to such other parties is on a non-profit basis.

(2) The communications of other parties in accordance with § 94.17.

(3) Emergency communications unrelated to the licensee's activities in accordance with § 94.11.

(b) The radio facilities shall not be used for any of the following:

(1) Rendition of a communications common carrier service, except stations carrying public correspondence associated with public coast stations licensed under Part 81 may continue in operation for the balance of the term of their license and for an additional five-year renewal term.

(2) Transmission of program material for use in connection with broadcasting, except that: the facilities of closed circuit educational television systems that have been licensed to educational institutions may be utilized for the transmission of program material to noncommercial educational broadcast stations, provided that the use of the facilities exclusively for carrying such program material shall be less than 50 percent of their total use during any one year of the license period, no charge either direct or indirect shall be made for such use, and licensees shall submit reports with their applications for renewals showing the breakdown of usage in terms of primary and alternate uses during each year of the license term.

(3) For relay of television, standard, or FM broadcast signals to community antenna television systems (CATV), except for operations of this nature authorized pursuant to § 94.25(h).

§ 94.11 Points of communication.

(a) Stations authorized in this service may communicate with associated operational-fixed stations and fixed receivers and with units of associated stations in the mobile service licensed under Safety and Special Radio Service rule parts. In addition, intercommunication is permitted with other licensed stations and with U.S. Government stations in those cases which require cooperation or coordination of activities or when cooperative use arrangements in accordance with § 94.17 are contemplated; *provided, however,* that where communication is desired with stations authorized to operate under the authority of a foreign jurisdiction, prior approval of this Commission must be obtained; *and provided further,* that the authority under which such other stations operate does not prohibit the intercommunication.

(b) During a period of emergency in which the normal communication facilities are disrupted as a result of hurricane, flood, earthquake, or similar disaster, stations may be used for emergency communications unrelated to the licensee's activities in accordance with the following:

(1) As soon as possible, after the beginning of such emergency use, notice must be sent to the Commission in Washington, D.C., and to the Engineer in Charge of the Radio District in which the station is located, stating the nature of the emergency and the use to which the station is being put;

(2) The emergency use of the station must be discontinued as soon as substantially normal communication facilities are again available, and the Commission in Washington, D.C., and the Engineer in Charge mut be notified immediately when such special use of the station is terminated; and

(3) The Commission may at any time order discontinuance of such special use of the authorized facilities.

§ 94.13 Interconnection of private operational-fixed microwave stations.

(a) Stations authorized under this part may be interconnected with the facilities of common carriers subject to applicable tariffs.

(b) Stations authorized under this part may be interconnected with any stations of the licensee authorized under Parts 81 87, 89, 91, 93, and 94, and with stations of other licensees authorized pursuant to the provisions of Parts 81, 87, 89, 91, 93, and 94 provided that the licensees comply with all of the applicable provisions of § 94.17.

§ 94.15 Policy governing the assignment of frequencies.

(a) Frequencies in this service are assignable to provide the full-period service required in most private systems, and assignments shall be protected from interference in the manner and to the extent prescribed in this subpart. However, where a full-period service is not needed by the licensee, the same frequencies may be assigned to another applicant in the same area on a scheduled, time-sharing basis, provided that the applicant and existing licensees have filed a time-sharing agreement with the Commission.

(b) All applicants for new or modified stations shall make an engineering analysis of the potential interference between the proposed facilities and previously authorized facilities and pending applications. The applicant shall include as supplemental information with the application: (1) a certification that, based upon frequency engineering analysis, the potential interference shall not exceed that prescribed by the interference criteria in § 94.63; or (2) if the potential interference is to exceed that prescribed by § 94.63, a statement to the effect that all parties affected have agreed to accept the higher level of interference. In either case, the applicant shall furnish the names of the licensees and the call signs of the stations which were considered in conducting the engineering analysis. Further, applicants and licensees will be expected to cooperate promptly and fully in the exchange of technical information necessary to performing frequency engineering analyses and, in the event of technical differences, cooperate in resolving these differences.

(c) Applicants for new facilities not forming a part of a previously authorized system shall select the frequency band having available frequencies where the assignable bandwidth is most consistent with the proposed communication requirements. Applications shall contain supplemental information showing the basis for frequency band selection, the basis for the bandwidth requested, and the proposed schedule for implementation of bandwidth utilization. Consistent with this policy, each applicant normally will be authorized one transmit frequency per path in each direction where full duplex operation is required. Additional frequencies per path may be authorized upon a showing that: (1) the additional frequencies are required to accommodate the applicant's present and planned communications requirements; and technical factors preclude use of other bands. For the purposes of this requirement, technical factors to be considered in determining whether a frequency band is suitable for a proposed operation include: reliability objectives of the applicant; propagation characteristics of the band; atmospheric conditions in the proposed area of operation, such as rainfall and extreme temperature changes that may affect propagation outages; total path length of the proposed system; availability of radio equipment (but not its cost); and the relative availability of frequencies in the band where frequencies are requested and in the band where greater assignable bandwidth is available; or (2) expansion of previously authorized systems beyond the capacity originally contemplated is required. However, in no event will bandwidth greater than that associated with the transmit frequency as provided in § 94.65 be authorized. In addition, video systems employing more than 10 MHz bandwidth per channel will not be authorized on frequencies below 12,000 MHz; provided that stations authorized before August 1, 1975, not complying with the provisions of this paragraph may continue to be authorized.

(d) Except as provided in paragraph (h) of this section, applicants will be assigned the frequencies listed in § 94.65. Operation on other than the listed frequencies may be authorized where it is shown that the objectives or requirements of the interference criteria prescribed in § 94.63 could not otherwise be met to resolve the interference problems. Also, operation on other than listed frequencies within a single standard bandwidth may be authorized where amplitude modulation techniques are used. Finally, on frequencies, bands above 10,000 MHz, operations on multiple transmitting frequencies may be authorized on a case-by-case basis within a single standard bandwidth.

(e) Except as provided in paragraph (h) of this section, frequencies will be assigned in pairs for those stations employing full-duplex transmission, with one of the frequencies designated as the station transmit frequency and the other as the receive frequency. Provision is made in some bands for non-paired frequencies for systems employing one-way transmission. However, operation on frequencies not in accordance with the foregoing will be authorized only upon a

showing that the interference criteria of this part could not be met or that an exception is required to prevent intra-system interference.

(f) Except as provided in paragraph (h) of this section, applicants requiring more than one pair of frequencies at a single station location will be required to employ one end of the frequency band selected for all TRANSMIT frequencies at that location and the other end of the band for all RECEIVE frequencies at that location. However, exception to this requirement may be authorized upon a showing that the interference criteria of this part could not be met or that exception is required to prevent intra-system interference.

(g) Except as provided in paragraph (h) of this section, applicants requiring multiple transmit frequencies employed on separate paths from a single station location will not normally be authorized more than four of the paired transmit frequencies available in the band.

(h) Stations authorized before August 1, 1975, shall be exempt from paragraphs (d), (e), (f), and (g) of this section.

§ 94.17 Cooperative use of stations.

(a) Licensees and persons eligible to become licensees of stations under this part may make cooperative use of such licensed facilities under the conditions and subject to the limitations specified in this section.

(b) The cooperative use of licensed facilities is authorized only on frequencies for which all participants would be separately eligible for assignment.

(c) Licensed facilities may be cooperatively used under this section only:

(1) Without cost to any of the participants in its use, or;

(2) On a non-profit, cost-sharing basis pursuant to a written contract between the parties involved which provides that the licensee shall have control of the licensed facilities and that contributions to capital and operating expenses are accepted only on a cost-sharing, non-profit basis, prorated equitably, among all participants using the facilities, or;

(3) On a reciprocal basis (i.e., use of one licensee's facilities in exchange for the use of another licensee's facilities) without charge for either capital or operating expense, pursuant to a written contract between the licensees involved.

(d) Each licensee sharing its facilities on a non-profit, cost-sharing basis under paragraph (c)(2) of this section shall maintain records showing the cost of the facilities and their operation and use, the charges made to and payments made by each of those using the facilities or contributing to their capital cost or operating expense, and the information specified below, and such records shall be available for inspection by the Commission.

(e) Each licensee sharing its facilities under this section shall file a notification with the Commission 30 days prior to the use of its facilities by any other person that has not been specified in its license application or in a prior notification to the Commission, containing the following information:

(1) Name and description of the licensee;

(2) Call sign of the station or stations;

(3) The radio service in which the station is licensed;

(4) The names of all prospective participants in the cooperative use of the station and a description of each participant sufficient to show its eligibility for participation under this section and its eligibility to use the frequencies assigned to the station; and,

(5) A copy of the contract between the parties for the cooperative use of the facilities.

(f) The licensee may institute the service described in the notification filed pursuant to paragraph (e) of this section 30 days after filing unless the Commission during that period notifies the licensee that the information supplied is inadequate or that the proposed service is not authorized under these regulations, and the licensee shall then have the right to amend or to file another notification to remedy the inadequacy or defect and to institute service 30 days thereafter, or at such earlier date as the Commission may set upon finding that the inadequacy or defect has been remedied.

(g) Except when the facilities are shared solely by governmental entities, each licensee sharing its facilities under paragraph (c)(2) of this section on a non-profit, cost-sharing basis shall file an annual report with the Commission, using FCC Form 402-A, within 90 days of its fiscal year, containing:

(1) A financial statement of operations during the preceding fiscal year in sufficient detail to show compliance with the requirements of this section;

(2) The names of those who have shared the use of the facilities during the preceding fiscal year;

(3) A brief statement as to the use of the facilities made by each person sharing the use and an estimate of the approximate percentage of use by each participant during the preceding fiscal year; and

(4) Any change in the items previously reported to the Commission, concerning such facilities or their use in the application for the license or in a notification of this section.

(h) When radio facilities are shared under the provisions of this section without charge and without any other consideration from any other participants, or on a reciprocal basis, in lieu of the statements required to be filed by paragraph (g) of this section, the licensee shall file with the Commission within 90 days after the close of its fiscal year a statement advising the Commission of that fact.

(i) The licensee shall inform the Commission whenever the cooperative use of any of its facilities in accordance with this section is permanently discontinued.

Subpart B—Applications, Authorizations, and Notifications

§ 94.23 Station authorization required.

No radio transmitter shall be operated in this service except under and in accordance with a proper station authorization granted by the Federal Communications Commission.

§ 94.25 Filing of applications.

(a) Persons desiring to install and operate radio transmitting equipment must submit an application for a radio station authorization. To assure that necessary information is supplied in a consistent manner by all persons, standard forms are prescribed for use in connection with the majority of applications and reports submitted for Commission consideration. Standard numbered forms applicable to the private operational-fixed radio stations are described in § 94.27, and may be obtained from the Washington, D.C. office of the Commission, or from any of its engineering field offices. In matters where no standard form is applicable, the informal application procedure outlined in § 94.27 should be followed.

(b) Every application for a radio station authorization, and all correspondence relating thereto, shall be submitted to the Commission's office at Washington, D.C. 20554. Each application shall be accompanied by the fee prescribed in Subpart G of Part 1 of the Commission's rules.

(c) Unless otherwise specified, an application shall be filed at least ninety days prior to the date on which it is desired that Commission action thereon be completed.

(d) Applications involving operation at temporary locations:

(1) An application for authority to operate a fixed station at temporary locations is required and shall specify the general geographic area within which the operation will be confined. The area specified may be a city, a county or counties, or a state or states. Sufficient data must be submitted to show the need for the proposed area of operation.

(2) If an operational-fixed station is authorized to be operated at temporary locations and actually remains, or is to remain, at the same location for a period of over a year, application for a separate authorization specifying the fixed location shall be made as soon as possible but not later than 30 days after the expiration of the one-year period.

(3) Operation of a fixed station at temporary locations will be authorized only on the frequency pair 6535/6575 MHz, and in frequency bands shared for operational fixed and mobile operations.

(e) Applicants proposing to construct a radio station on a site located on land under the jurisdiction of the U.S. Forest Service, U.S. Department of Agriculture, or the Bureau of Land Management, U.S. Department of the Interior, must supply the information and must follow the procedure prescribed by § 1.70 of this chapter.

(f) In order to minimize possible harmful interference at the National Radio Astronomy Observatory site located at Green Bank, Pocohontas County, W. Va., and at the Naval Radio Research Observatory site at Sugar Grove, Pendleton County, W. Va., any applicant for a station authorization other than tem-

porary-fixed seeking a station license for a new station or to modify an existing station in a manner which would change either the frequency, power, antenna height or directivity, or location of such a station within the area boarded by 39°15′ N. on the north, 78°30′ W. on the east, 37°30′ N. on the south, and 80°30′ W. on the west shall at the time of filing such application with the Commission, simultaneously notify the Director, National Radio Astronomy Observatory, Post Office Box No. 2, Green Bank, W. Va. 24944, in writing, of the technical particulars of the proposed station. Such notification shall include the geographical coordinates of the antenna, antenna height, antenna directivity if any, proposed frequency, type of emission and power. In addition, the applicant shall indicate in his application to the Commission the date notification was made to the Observatory. After receipt of such applications, the Commission will allow a period of twenty (20) days for comments or objections in response to the notifications indicated. If an objection to the proposed operation is received during the 20-day period from the National Radio Astronomy Observatory for itself or on behalf of the Naval Radio Research Observatory, the Commission will consider all aspects of the problem and take whatever action is deemed appropriate.

(g) Protection for Table Mountain Radio Receiving Zone, Boulder County, Colo.: Applicants for a station authorization to operate in the vicinity of Boulder County, Colo., under this part are advised to give due consideration, prior to filing applications, to the need to protect the Table Mountain Radio Receiving Zone from harmful interference. These are the Research Laboratories of the Department of Commerce, Boulder, Colo. To prevent degradation of the present radio signal level at the site, the Department of Commerce seeks to ensure that field strengths at 40°07′50″ N. latitude, 105°14′40″ W. longitude, resulting from new assignments or from the modification or relocation of existing facilities in this service do not exceed 1 mV/m in the authorized bandwidth of service. (A field strength of 1 mV/m is equivalent to a power flux density of −85.8 dBW/m² assuming a free-space characteristic impedance of 376.7 ohms.)

(1) Advance consultation is recommended particularly for those applicants who have no reliable data which indicates whether the field strength or power flux density figures would be exceeded by their proposed radio facilities. In such instances the following is a suggested guide for determining whether coordination is recommended:

(i) All stations within 1.5 statute miles;

(ii) Stations within 3 statute miles with 50 watts or more effective radiated power (ERP) in the primary plane of polarization in the azimuthal direction of the Table Mountain Receiving Zone;

(iii) Stations within 10 statute miles with 1 kW or more ERP in the primary plane of polarization in the azimuthal direction of the Table Mountain Receiving Zone;

(iv) Stations within 50 statute miles with 25 kW or more ERP in the primary plane of polarization in the azimuthal direction of the Table Mountain Receiving Zone.

(2) Applicants concerned are urged to communicate with the Radio Frequency Management Coordinator, Department of Commerce, NOAA/OT/NBS, Time and Frequency Division, Boulder Laboratories, Boulder, Colo. 80302; telephone 303–499–1000, extension 3542 or 3294, in advance of filing their applications with the Commission.

(3) The Commission will not screen applications to determine whether advance consultation has taken place. However, applicants are advised that such consultation can avoid objections from the Department of Commerce or proceedings to modify any authorization which may be granted which, in fact, delivers a signal at the reference point in excess of the field strength specified herein.

(h) Applications for authorizations to construct new microwave operational-fixed radio stations for relaying television, standard, or FM broadcast signals to community antenna television (CATV) systems, will not be accepted. Existing systems authorized prior to November 22, 1965, may continue to be authorized under this part until not later than August 1, 1980 or until an earlier date if it is determined that the frequencies in the 12200–12700 MHz band are needed for operational-fixed stations, subject to the following:

(1) No additional stations or frequencies will be authorized;

(2) Replacement of equipment may be authorized only if the new equipment is type accepted for operation in the 12700–12950 MHz band;

(3) Authorizations and renewals thereof may be granted for a term not exceeding one year;

(4) Authorizations and renewals shall contain the condition that such cable television systems shall operate in compliance with the provisions of Part 76 (Cable Television Service) of this chapter.

§ 94.27 Application and standard forms.

(a) A separate application shall be submitted on FCC Forms 402 and 402–S for the following:

(1) New station authorization for private operational-fixed microwave station.

(2) New authorization to operate one or more fixed stations at temporary locations in this service.

(3) Modification of station license.

(b) When the holder of a station authorization desires to assign to another person the privilege to use a radio station, he shall submit to the Commission a letter setting forth his desire to assign all right, title, and interest in and to such authorization, stating the call sign and location of station. This letter shall also include a statement that the assigner will submit his current station authorization for cancellation upon completion of the assignment. Enclosed with this letter shall be an application for Assignment of Authorization on FCC Form 402, prepared by and in the name of the person to whom the station is being assigned. (See § 94.47)

(c) A separate application shall be submitted on FCC Form 703 whenever it is proposed to change, as by transfer of stock ownership, the control of a licensee.

(d) Informal application—an application—an application not submitted on a standard form prescribed by the Commission is considered to be an informal application. Each informal application, normally in letter form properly signed, shall be clear and complete within itself as to the facts presented and the action desired.

(e) FCC Form 456 "Notification of Completion of Radio Station Construction," may be used to advise the district office that construction of the station is complete and that operation will begin. (See § 0.121 of this chapter)

(f) Application for renewal of station license shall be submitted on FCC Form 405A. Applications for renewal must be made during the license term and should be filed within 90 days, but not later than 30 days prior to the end of the license term. In any case in which the licensee has, in accordance with the provisions of this chapter, made timely and sufficient application for renewal of license, no license with reference to any activity of a continuing nature shall expire until such application shall have been finally determined.

§ 94.29 Who may sign applications.

(a) Except as provided in paragraph (b) of this section, applications, amendments thereto, and related statements of fact required by the Commission shall be personally signed by the applicant if the applicant is an individual; by one of the partners if the applicant is a partnership; by an officer if the applicant is a corporation; or by a member who is an officer if the applicant is an unincorporated association. Applications, amendments, and related statements of fact filed on behalf of eligible governmental entities shall be signed by such duly elected or appointed officials as may be competent to do so under the laws of the applicable jurisdiction.

(b) Applications, amendments thereto, and related statements of fact required by the Commission may be signed by the applicant's attorney in case of the applicant's physical disability or of his absence from the United States. The attorney shall, in that event, separately set forth the reason why the application is not signed by the applicant. In addition, if any matter is stated on the basis of the attorney's belief only (rather than his knowledge) he shall separately set forth his reasons for believing that such statements are true.

(c) Only the original of applications, amendments, or related statements of

fact need be signed; copies may be conformed.

(d) Applications, amendments, and related statements of fact need not be signed under oath. Willful false statements made therein, however, are punishable by fine and imprisonment, U.S. Code Title 18, Section 1001, and by appropriate administrative sanctions, including revocation of station license pursuant to section 312(a)(1) of the Communications Act of 1934, as amended.

§ 94.31 Supplemental information to be submitted with application.

Each application for a new or modified station authorization shall be accompanied by the supplemental information listed below.

(a) Any statements or showings required by the applicable subpart of this part, in connection with the use of a frequency requested. (See § 94.15 and § 94.-63);

(b) A functional system diagram and a detailed description of the manner in which the interrelated stations will operate when the station is, or will be, part of a system involving two or more stations at different fixed locations;

(c) Copies of all agreements and statements which may be required under § 94.17 if operation is desired in connection with any cooperative use of the proposed radio communication facilities;

(d) Statements required by the rules in connection with developmental operation (See Subpart E of this part);

(e) Data required by the rules in connection with operation of fixed stations at temporary locations;

(f) Any statements or other data required under special circumstances as set forth in this part, or required upon request by the Commission;

(g) Information required by § 1.70 of this chapter concerning use of certain Federal Government sites;

(h) Information required by Part 17 of the Commission's rules concerning "Construction, Marking, and Lighting of Antenna Structures";

(i) Information concerning "Environmental Impact" as required by § 1.1311 of this chapter.

§ 94.33 Preliminary processing of applications.

(a) Applications received for filing are given a file number. The assignment of a file number to an application is for administrative convenience and does not indicate the acceptance of the application for filing and processing.

(b) Applications which are incomplete with respect to answers, supplementary statements, execution, or other matters of a formal character shall be deemed to be defective and may be returned to the applicant with a brief statement as to such defects. In addition, if an applicant is requested by the Commission to file any additional documents or information not included in the prescribed application form, failure to comply with such request will be deemed to render the application defective, and such application may be dismissed. Applications will also be deemed to be defective and may be returned to the applicant in the following cases:

(1) Statutory disqualification of applicant;

(2) Proposed use or purpose of station would be unlawful;

(3) Requested frequency is not allocated for assignment for the service proposed.

(c) Applications which are not in accordance with the provisions of this chapter, or other requirements of the Commission, will be considered defective and may be dismissed unless accompanied by a request of the applicant for waiver of, or exception to, any rule, regulation, or requirement with which the application is in conflict. Such request shall show the nature of the waiver or exception desired, and set forth the reasons in support thereof to include a showing that unique circumstances are involved and that there is no reasonable alternative solution within existing rules. Applications may be dismissed if the accompanying petition for waiver of rules does not set forth reasons which, sufficient if true, would justify a waiver or exception.

(d) Any application which has been returned to the applicant for correction will be processed in original order of receipt when resubmitted if it is received within 30 days (45 days outside Continental United States) from the date on which it was returned to the applicant. If the application is not resubmitted within the prescribed time, it will be treated as a new application and considered at the time other applications received on the same date are considered.

§ 94.35 Amendment or request for dismissal of application.

(a) Any application, except for mutually exclusive applications or those against which a petition to deny has been filed, may be amended as a matter of right at any time prior to the time the application is granted or designated for hearing. Each amendment to an application shall be signed and submitted in the same manner as required for the original application. The procedures for amending applications mutually exclusive under this part, applications against which a petition to deny has been filed, and applications designated for hearing are set forth in § 1.918 of this chapter.

(b) Any application may, upon written request signed by the applicant or his attorney, be dismissed without prejudice as a matter of right prior to the time the application is granted or designated for hearing.

§ 94.37 Grant of application without hearing.

(a) The Commission will grant without a hearing an application for a station authorization if it is proper upon its face and if the Commission finds from an examination of such application and supporting data, any pleading filed, or other matters which it may officially notice, that:

(1) There are no substantial and material questions of fact;

(2) The applicant is qualified;

(3) A grant of the application would not involve modification, revocation, or non-renewal of any existing license;

(4) A grant of the application would not preclude the grant of any mutually exclusive application; and

(5) A grant of the application would serve the public interest, convenience, and necessity.

(b) If a petition to deny an application has been filed pursuant to § 1.962 and the Commission grants such application pursuant to paragraph (a) of this section, the Commission will deny the petition and issue a concise statement of the reason for such denial and disposing of all substantial issues raised by the petition. (See § 1.973 of this chapter, as to applications designated for hearing.)

§ 94.39 License term.

(a) Licenses for stations in this service will normally be issued for a term of five years from the date of original issuance, modification, or renewal, except that, in some instances, a term of from one to five years will be applied, the term varying as may be necessary to permit the orderly scheduling of renewal applications.

(b) Authorizations for stations engaged in developmental operation under subpart E of this part will be issued upon a temporary basis for a specific period of time, but in no event to extend beyond one year from date of original issuance, modification or renewal.

§ 94.41 Partial grant of applications.

Where the Commission, without a hearing, grants any application in part, or with any privilege, terms or conditions other than those requested, or subject to any interference that may result to a station if designated application or applications are subsequently granted, the action of the Commission shall be considered as a grant of such application unless the applicant shall, within 30 days from the date on which such grant is made or from its effective date if a later date is specified, file with the Commission a written request rejecting the grant as made. Upon receipt of such request, the Commission will vacate its original action upon the application and set the application for hearing in the same manner as other applications are set for hearing. (See § 1.973 of this chapter as to applications designated for hearing.)

§ 94.43 Procedure for obtaining special temporary authority.

Authorizations in this service are granted in accordance with procedures set forth in this subpart. Therefore, temporary authorizations which depart from these procedures will not normally be considered except as specified below:

(a) Special temporary authorization may be granted upon a written request (See requirements for informal applications in § 94.27(d).) in the following circumstances:

(1) In emergency situations;

(2) To permit restoration or reloca-

tion of existing facilities to continue communication services;

(3) To conduct tests to determine necessary data for the preparation of an application for regular authorization;

(4) For a temporary non-recurring service where a regular authorization is not appropriate.

(b) The public notice requirements of § 1.962 of this chapter do not apply to the following requests:

(1) To a non-renewable special temporary authorization for 30 days where an application for regular operation is not contemplated;

(2) To a non-renewable special temporary authorization for 60 days pending or after the filing of an application for regular operation;

(3) To a special temporary authorization for 90 days, renewable for an additional 90 days, granted after the filing of an application for regular operation upon a showing that such application is otherwise authorized by law and there are extraordinary circumstances requiring emergency operations in the public interest and delay in the institution of such emergency operations would seriously prejudice the public interest.

NOTE: These temporary authorizations may not be extended unless the public notice requirements have been met.

(c) Request for special temporary authority shall contain the following information:

(1) Name, address, and citizenship status of applicant;

(2) Need for special action, including a description of any emergency or damage to equipment;

(3) Type of operation to be conducted;

(4) Purpose of operation;

(5) Time and date of operation desired;

(6) Class of station and nature of service;

(7) Location of station and points with which station will communicate;

(8) Equipment to be used, specifying manufacturer, model number, and number of units;

(9) Frequency(s) desired;

(10) Azimuth and beamwidth of major lobe of transmitting antenna and ERP;

(11) Type of emission;

(12) Description of antenna to be used, including height.

§ 94.45 Changes in authorized station requiring modification.

(a) Modification of license or special temporary authority in accordance with § 94.43 is required for the following changes in authorized stations:

(1) Any change in frequencies used;

(2) Any change in antenna azimuth;

(3) Any change in antenna beamwidth;

(4) Any change in antenna or passive repeater location greater than 1 second or which involves a requirement for special aeronautical study;

(5) Any change in antenna polarization;

(6) Any change in antenna height;

(7) Any change in the size of passive reflectors or repeaters associated with the facilities of an authorized station;

(8) Any increase in emission bandwidth beyond that authorized;

(9) Any change in the type of emission;

(10) Any change in authorized effective radiated power in excess of 3dB (a 2-to-1 ratio);

(11) Substitution of equipment having different frequency tolerance.

(b) When the name of the licensee is changed (without changes in the ownership, control, or corporate structure), or when the mailing address is changed (without changing the authorized location of the fixed station) a formal application for modification of license is not required. However, the licensee shall notify the Commission promptly of these changes. The notice, which may be in letter form, shall contain the name and address of the licensee as they appear in the Commission's records, the new name and/or address as the case may be, the call signs and classes of all radio stations authorized to the licensee under this part and the radio service in which each station is authorized. The notice shall be sent to: (1) Secretary, Federal Communications Commission, Washington, D.C. 20554, and (2) the Engineer in Charge of the radio district in which the station is located, and a copy shall be maintained with the license of each station until a new license is issued.

§ 94.47 Transfer and assignment of station authorization.

A station authorization, and the rights therein granted by such authorization shall not be transferred, assigned, or in any manner either voluntarily or involuntarily disposed of, or indirectly disposed of by transfer of control of any corporation holding such authorization, to any person, unless the Commission shall, after securing full information, advise that said transfer is in the public interest. (See § 94.27(b) for standard forms and procedures required for assignment of station licenses.)

§ 94.49 Report of temporary location.

The Engineer in Charge of each radio district wherein temporary operation by an operational fixed station is authorized shall be notified of such inter-district operating authority only at such time as the initial or modified authorization for such operation is granted by the Commission. (See § 0.121 of this chapter for description of Radio District boundaries and for addresses of Engineers in Charge.)

§ 94.51 Time in which station must be placed in operation.

The station authorized must be placed in operation within twelve months from the date of grant or the authorization shall be invalid and must be returned to the Commission for cancellation. Requests for extension may be granted upon a showing of good cause, setting forth in detail the applicant's reasons for failure to place the facility in operation in the prescribed twelve-month period. Such requests must be submitted no later than 30 days prior to the end of the twelve-month period.

§ 94.53 Discontinuance of station operation.

In case of permanent discontinuance of operation of a station licensed under this part, the licensee shall forward the station license to the Washington, D.C., office of the Commission for cancellation. A copy of the request for cancellation of the license shall be forwarded to the Commission's Engineer in Charge of the district in which the station is located. For purposes of this section, a station which is not operated for a period of one year is considered to have been permanently discontinued.

§ 94.55 Notification of commencement or discontinuance of station operation.

The Engineer in Charge of each radio district in which an operational-fixed station is located and the Commission in Washington, D.C. shall be notified when the station has been initially placed in operation, and when operation is permanently discontinued. (See § 0.121 of this chapter).

§ 94.57 Continued operation subsequent to modification.

Operation in accordance with the provisions of an authorization which has been modified may be continued until such modifications can be implemented, *provided* that the provisions of § 94.51 and § 94.53 are met.

Subpart C—Technical Standards

§ 94.61 Applicability.

(a) The technical standards of this subpart shall govern, effective August 1, 1975, the issuance of authorizations for new stations and changes in authorized stations as specified in § 94.45. Stations authorized prior to this date not meeting the provisions of this subpart may continue to be authorized for operation under previous technical standards through July 31, 1985. Except as provided in § 94.65, effective August 1, 1985, all stations will be required to operate in accordance with the provisions of this subpart.

(b) Frequencies in the following bands are available for assignment to stations in the Private Operational-Fixed Microwave Service:

Frequency Band (MHz)	
952 to 960	(1)
1850 to 1990	(2), (25)
2130 to 2150	(3)
2150 to 2160	(4)
2180 to 2200	(3)
2450 to 2500	(4)
2500 to 2690	(5)
6525 to 6575	(15)
6575 to 6625	(2), (15)
6625 to 6875	(2), (3), (15)
12,200 to 12,500	(3)
12,500 to 12,700	(2), (3)
13,200 to 13,250	(3), (14)
18,360 to 19,040	(3), (16), (17)
21,200 to 22,000	(10), (11), (12), (16)
22,000 to 23,600	(10), (12), (13)
31,000 to 31,200	(3)
38,600 to 40,000	(3), (18)
Bands above 40,000	(18)

[1] Frequencies in this band are shared with stations in the International Fixed (in Puerto Rico and the Virgin Islands) and International Control Services. (Part 23)

[2] Frequencies in this band are shared with stations in the International Control Service. (Part 23)

[3] Frequencies in this band are shared with stations in the Multipoint Distribution Service. (Part 21)

[4] Frequencies in this band are shared with mobile and radiolocation stations in other services, and must accept harmful interference that may be experienced from operations of industrial, scientific, or medical (ISM) equipment operating on 2450 MHz.

[5] Frequencies in this band are shared with earth stations in the Fixed Satellite Service (Part 25), space stations in the Broadcasting Satellite Service (Part 25), and with stations in the Instructional Television Fixed Service (ITFS) (Part 00). Stations licensed under Part 94 are restricted to the three group H channels, 2650–2656 MHz, 2662–2668 MHz and 2674–2680 MHz; and the three response frequencies, 2686.9375, 2687.9375, and 2688.9375 MHz.

[6] Frequencies in this band are shared with Earth (Earth-to-space) stations in the Fixed Satellite Service. (Part 25)

[7] [Reserved]

[8] Frequencies in this band are shared with space (space-to-Earth) stations in the Fixed Satellite Service. (Part 25)

[9] This band is shared with fixed and mobile station operations authorized under other services.

[10] Frequencies in this band are shared with fixed stations in the Domestic Public Radio Services. (Part 21)

[11] Frequencies in this band are shared with space (space-to-Earth) stations in the Earth Exploration Satellite Service. (Part 25)

[12] Authorizations are normally granted only to common carriers (Part 21) in the band segments 21.2–21.8 GHz and 22.4–23.00 GHz, and to operational-fixed users (Part 94) in the segments 21.8–22.4 GHz and 23.0–23.6 GHz. Cross-service assignments for these users may be made only upon a showing that no interference-free frequencies are available in the appropriate band segments.

[13] This frequency band is shared with U.S. Government Stations.

[14] Frequencies in this band are shared with stations in the Television Auxiliary Broadcast Service (Part 74), the Local Television Transmission Service (Part 21) and the Point-to-Point Microwave Service (Part 21).

[15] This band is not available for operation by persons whose sole basis for eligibility in this service is established under § 91.551(a) for licensing in the Business Radio Service. (Part 91)

[16] Available on developmental basis only under Subpart E of this part.

§ 94.63 Interference protection criteria for operational-fixed stations.

(a) Before filing an application for new or modified facilities under this part, the applicant must perform a frequency engineering analysis to assure that the proposed facilities will not cause interference to existing or previously applied-for stations in this service of a magnitude greater than that specified in the criteria set forth in paragraph (b) of this section, unless other wise agreed to in accordance with § 94.15(b). In addition, when the proposed facilities are to be operated in the bands 18,360–19,040 MHz, 21,200–21,800 MHz, 22,400–23,000 MHz, 31,000–31,200 MHz, or 38,600–40,000 MHz, applicants shall follow the prior coordination procedure specified in § 21.100(d) of this chapter as regards stations in the Domestic Public Radio Services, and when the proposed facilities are to be operated in the bands 2655–2690 MHz or 12,500–12,700 MHz, applications shall also follow the procedures in § 21.706 (c) and (d) and the technical standards and requirements of Part 25 of this chapter as regards licensees in the Communication-Satellite Service. (See also § 94.77)

(b) The interference protection criteria for operational-fixed stations are as follows:

(1) To long-haul analog systems, employing frequency modulated radio and frequency division multiplexing to provide multiple voice channels, the allowable interference level per exposure:

(i) Due to co-channel sideband-to-sideband interference shall not exceed 5 pwpO; [1]

(ii) Due to co-channel carrier-beat interference shall not exceed 50 pwpO

(2) To short-haul analog systems employing frequency modulated radio and frequency division multiplexing to provide multiple voice channels, the allowable interference level per exposure:

(i) Due to co-channel sideband-to-sideband interference shall not exceed 25 pwpO (250 pwPO in the 952–960 MHz band);

(ii) Due to co-channel carrier-beat interference shall not exceed 50 pwpO (1000 pwpO in the 952–960 MHz band.)

[17] Assignments will not be made in the band segments 18,360–18,580 MHz or 18,820–19,040 MHz unless a showing is made that there are no available frequencies in the band segments 18,580–18,700 MHz and/or 18,700–18,820 MHz. All assignments in any band segment will be for the highest available frequency.

[18] These frequencies are assigned for use within a rectangular service area to be described in the application by the maximum and minimum latitudes and longitudes. Such service area shall be as small as practicable consistent with the local service requirements of the user. The use of these frequencies is subject to the terms and conditions set forth in § 21.711. These frequencies shall be assigned only where it is shown that the applicant will have a reasonable projected requirement for a multiplicity of service points or transmission paths within the area.

[1] Picowatts (pwp0) of absolute noise power, psophometrically weighted, appearing in an equivalent voice band channel of 300–3400 Hz.

(3) *FM-TV.* In analog systems employing frequency modulated radio that is modulated by a standard television (visual) signal, the allowable interference level per exposure shall not exceed the levels which would apply to a long-haul or short-haul FM-FDM systems, as outlined in subparagraphs (1) and (2) hereof, having a 600–1200 voice channel capacity.

(4) *Time Division Multiplexing.* In systems where the radio is modulated by time division multiplexing (digital modulation) to provide multiple voice channels, the allowable interference level per exposure shall be equivalent to that applied in subparagraphs (1) and (2) hereof.

(c) In addition to the requirements of paragraph (b) of this Section the adjacent channel interference protection criteria to be afforded, regardless of system length, or type of modulation, multiplexing, or frequency band, shall be such that the interfering signal shall not produce more than 1.0 dB degradation of the practical threshold of the protected receiver.

(d) *Applying the Criteria:*

(1) The criteria specified in paragraphs (b) and (c) of this section shall be applied by calculating the ratio in dB between the desired (carrier) signal and the undesired (interfering) signal (C/I ratio) appearing at the input to the receiver under investigation (victim receiver).

(2) The development of the C/I ratios from the criteria and the methods employed to perform path calculations shall follow generally acceptable good engineering practices. Procedures as may be developed by the Electronics Industries Association (EIA), the Institute of Electrical and Electronics Engineers, Inc. (IEEE), the American National Standards Institute (ANSI) or any other recognized authority will be acceptable to the Commission.

(3) Where the applicant's proposed facilities are of a type not included in paragraph (b) of this Section or where the development of the carrier to interference (C/I) ratio is not covered by generally acceptable procedures, or where the applicant does not wish to develop the carrier to interference ratio, the applicant shall, in the absence of criteria or a developed C/I ratio, employ the following C/I protection ratios:

(i) *Co-channel interference:* both sideband and carrier-beat, applicable to all bands; the existing or previously authorized system shall be afforded a carrier to interfering signal protection ratio of at least 90 dB, except in the 952–960 MHz band where it shall be 65dB.

(ii) *Adjacent channel interference:* applicable to all bands; the existing or previously authorized system shall be afforded a carrier to interfering signal protection ratio of at least 56 dB, except in the 952–960 MHz band where it shall be 43 dB.

(e) An applicant filing for a modification of an existing station under the provisions of § 94.45 need not perform the interference protection analyses required by this section if the only modifications

made to the station are one or more of the following:

(1) Substitution of transmitting equipment having tighter frequency tolerance.

(2) Any decrease in antenna primary lobe beamwidth which is accompanied by a corresponding decrease in antenna input power so as to not increase the effective radiated power in excess of a 2 to 1 ratio.

§ 94.65 Frequencies.

Frequencies normally available for assignment in this service are set forth with applicable limitations in the following tables, except that licensees holding valid authorizations prior to August 1, 1975 which do not meet the provisions of this section may continue to be authorized indefinitely:

(a) *952–960 MHz.*

(1) 100 kHz maximum bandwidth.

PAIRED FREQUENCIES

Transmit (or receive)	*Receive (or transmit)*
956.4	[1] 952.8
956.5	[1] 952.9
956.6	953.0
956.7	953.1
956.8	953.2
956.9	953.3
957.0	953.4
957.1	953.5
957.2	953.6
957.3	953.7
957.4	953.8
957.5	953.9
957.6	954.0
957.7	954.1
957.8	954.2
957.9	954.3
958.0	954.4
958.1	954.5
958.2	954.6
958.3	954.7
958.4	954.8
958.5	954.9
958.6	955.0
958.7	955.1
958.8	955.2
958.9	955.3
959.0	955.4
959.1	955.5
959.2	955.6
959.3	955.7
959.4	955.8
959.5	955.9
959.6	956.0
959.7	956.1
959.8	[1] 956.2
959.9	[1] 956.3

UNPAIRED FREQUENCIES

952.1 [2]	[2] 952.5
952.2 [2]	[2] 952.6
952.3 [2]	[2] 952.7
952.4 [2]	

[1] Available for purposes other than the control of traffic signals with only omnidirectional operation on the higher frequency of the pair and directional operation on the lower frequency of the pair.

[2] Available for single frequency systems for purposes other than control of traffic signals, with only omnidirectional operation authorized at one station and directional operation at all others.

[3] Available only for omnidirectional usage to control traffic signals.

(2) 50 kHz maximum bandwith.

PAIRED FREQUENCIES

Transmit (or receive)	*Receive (or transmit)*
956.65	953.05
956.75	953.15
956.85	953.25
956.95	953.35
957.05	953.45
957.25	953.65
957.35	953.75
957.45	953.85
957.65	954.05
957.75	954.15
957.85	954.25
958.05	954.45
958.15	954.55
958.25	954.65
958.45	954.85
958.55	954.95
958.65	955.05
958.85	955.25
958.95	955.35
959.05	955.45
959.25	955.65
959.35	955.75
959.45	955.85
959.55	955.95
959.65	956.05

(3) 200 kHz maximum bandwidth.

PAIRED FREQUENCIES

(or receive) Transmit	*(or transmit) Receive*
957.15	953.55
957.55	953.95
957.95	954.35

PAIRED FREQUENCIES

Transmit (or receive)	*Receive (or transmit)*
958.35	954.75
958.75	955.15
959.15	955.55

(b) 1850–1990 MHz.

(1) 10 MHz maximum bandwith.

PAIRED FREQUENCIES

Transmit (or receive)	*Receive (or transmit)*
1855	1935
1865	1945
1875	1955
1885	1965
1895	1975
1905	1985

UNPAIRED FREQUENCIES

1915 [1]
1925 [1]

[1] Available for systems employing one-way transmission.

(2) 5 MHz maximum bandwidth.

PAIRED FREQUENCIES

Transmit (or receive)	*Receive (or transmit)*
1850	1940
1870	1950
1890	1960
1890	1970
1900	1950

(c) *2130–2150 MHz; 2180–2200 MHz.* 800 kHz maximum bandwidth, unless noted.

PAIRED FREQUENCIES

2130–2150 MHz Transmit (or receive)	*2180–2200 MHz Receive (or transmit)*
2130.8	2180.8
2131.6	[1] 2181.6
2132.4	2182.4
2133.2	[1] 2183.2
2134.0	2184.0
2134.8	[1] 2184.8
2135.6	2185.6
2136.4	[1] 2186.4
2137.2	2187.2
2138.0	[1] 2188.0
2138.8	2188.8
2139.6	[1] 2189.6
2140.4	2190.4
2141.2	[1] 2191.2
2142.0	2192.0
2142.8	[1] 2192.8
2143.6	2193.6
2144.4	[1] 2194.4
2145.2	2195.2
2146.0	[1] 2196.0
2146.8	2196.8
2147.6	[1] 2197.6
2148.4	2198.4
2149.2	2199.2

[1] Consideration will be given on a case-by-case basis to assigning these frequency pairs to systems employing 1600 kHz bandwidth transmissions.

(d) *2150–2160MHz:* Specific frequency of operation to be set forth in authorization. Omnidirectional transmission only may be authorized, subject to providing protection from harmful interference to previously authorized stations in this service and in other services sharing this band.

(e) *2450–2500* MHz: This band is shared with base, mobile, and radiolocation stations, and is subject to no protection from interference from Industrial, Scientific and Medical devices operating on 2450 MHz.

800 kHz maximum bandwidth, unless noted.

PAIRED FREQUENCIES

Transmit (or receive)	*Receive (or transmit)*
2451.9	2476.3
2452.7	2477.1
2453.5	2477.9
2454.3	2478.7
2455.1	[1] 2479.5
2455.9	2480.3
2456.7	2481.1
2457.5	2481.9
2458.3	2482.7
2459.1	2483.5
2459.9	2484.3
2460.7	2485.1
2461.5	2485.9
2462.3	2486.7
2463.1	[1] 2487.5
2463.9	2488.3
2464.7	2489.1
2465.5	2489.9
2466.3	2490.7
2467.1	2491.5
2467.9	2492.3
2468.7	2493.1
2469.5	2493.9
2470.3	2494.7
2471.1	[1] 2495.5
2471.9	2496.3
2472.7	2497.1
2473.5	2497.9
2474.3	2498.7
2475.1	2499.5

[1] Consideration will be given on a case-by-case basis to assigning these frequency pairs to systems employing wideband (8.0 MHz) transmissions.

(f) *2500–2690 MHz:* The television channels 2650–2656 MHz, 2662–2668 MHz, and 2674–2680 MHz, and the corresponding response frequencies 2686.9375 MHz, 2687.9375 MHz, and 2688.9375 MHz may be assigned for operational-fixed stations. Such assignments are subject to the condition that all operational-fixed stations must comply with the technical standards applicable to stations in the Instructional Television Fixed Service (ITFS) contained in Subpart I of Part 74 of this chapter. All other frequencies in this band are available for assignment only to stations in the Instructional Television Fixed Service. Stations authorized in this band as of July 16, 1971, which do not comply with the above provisions may continue to operate at their presently assigned frequencies. Request for subsequent license renewals or modifications of existing licenses will be considered; however, expansion of systems comprised of such stations will not be permitted.

2650–2656 [2]	2686.9375 [2]
2662–2668 [1]	2687.9375 [2]
2674–2680 [1]	2688.9375 [2]

[1] Channels available for operational-fixed stations employing televisions transmissions.

[2] Response frequencies: when authorized, they are paired respectively with the channels 2650–2656, 2662–2668 and 2674–2680 MHz, and used in accordance with the technical standards prescribed for ITFS response stain Part 74, Subpart I, of this chapter.

(g) *6525–6875 MHz*

(1) 10 MHz maximum bandwidth.

PAIRED FREQUENCIES

Transmit (or receive)	*Receive (or transmit)*
6565.0	6735.0
6585.0	6745.0
6595.0	6755.0
6605.0	6765.0
6615.0	6775.0
6625.0	6785.0
6635.0	6795.0
6645.0	6805.0
6655.0	6815.0
6665.0	6825.0
6675.0	6835.0
6685.0	6845.0
6695.0	6855.0
6705.0	6865.0
6535.0	[1] 6575.0

UNPAIRED FREQUENCIES

6545.0 [2]	6715.0 [2]
6555.0 [2]	6725.0 [2]

(2) 5 MHz maximum bandwidth.

PAIRED FREQUENCIES

Transmit (or receive)	*Receive (or transmit)*
6540.0	6720.0
6550.0	6730.0
6560.0	6740.0
6570.0	6750.0
6580.0	6760.0
6590.0	6770.0
6600.0	6780.0
6610.0	6790.0
6620.0	6800.0
6630.0	6810.0
6640.0	6820.0
6650.0	6830.0
6660.0	6840.0
6670.0	6850.0
6680.0	6860.0

UNPAIRED FREQUENCIES

6690.0 [2]
6700.0 [2]
6710.0 [2]

[1] Available only for emergency restoration, maintenance bypass, or other temporary-fixed purposes.

[2] Available for stations employing one-way transmissions.

(h) *12,000–12,700 MHz.*

(1) 20 MHz maximum bandwidth.

PAIRED FREQUENCIES

Transmit (or receive)	*Receive (or transmit)*
12,210	12,470
12,230	12,490
12,250	12,510
12,270	12,530
12,290	12,550
12,310	12,570
12,330	12,590
12,350	12,610
12,370	12,630
12,390	12,650
12,410	12,670
12,430	12,690

UNPAIRED FREQUENCIES

12,450 [1]

(2) 10 MHz maximum bandwidth.

PAIRED FREQUENCIES

Transmit (or receive	*Receive (or transmit)*
12,220	12,460
12,240	12,480
12,260	12,500
12,280	12,520
12,300	12,540
12,320	12,560
12,340	12,580
12,360	12,600
12,380	12,620
12,400	12,640
12,420	12,660
12,440	12,680

[1] Available for systems employing one-way transmissions.

(i) Frequencies in bands authorized in § 94.61(b) above 13,000 MHz are not paired and will be specified in authorizations.

§ 94.67 Frequency tolerance.

(a) Stations in this service shall maintain the carrier frequency of each authorized transmitter to within the following percentage of the assigned frequency.

Frequency band in MHz	*Tolerance as percentage of assigned frequency*
952–960	0.0005
1850–1990	0.002
2130–2150	0.001
2150–2160	0.001
2180–2200	0.001
2450–2500	0.001
2500–2690	[1]
6525–6875	0.005
12200–12700	0.005
12700–40000	0.03
Above 40000	[2]

[1] In accordance with the technical standards contained in Subpart I, Part 74 of this chapter.

[2] To be specified in authorization.

§ 94.69 Types of emission.

Stations in this service will be authorized any type of emission, method of modulation, and transmission characteristic, consistent with efficient use of the spectrum and good engineering practice except that:

(a) Type B, damped-wave emission will not be authorized.

(b) Stations in the 2500–2690 MHz band shall employ emission in accordance with the technical standards contained in Subpart I, Part 74 of this chapter.

§ 94.71 Emission and bandwidth limitations.

(a) Each authorization issued to a station operating in this service will show, as a prefix to the emission classification, a figure specifying the necessary bandwidth.

(b) The maximum bandwidth which will be authorized per frequency assigned, is as follows:

Frequency band MHz	*Maximum authorized bandwidth*
952–960 MHz	50, 100, or 200 kHz [1]
1850–1990 MHz	5 or 10 MHz [1]
2130–2150 MHz	800 or 1600 kHz [1]
2150–2160 MHz	10 MHz
2180–2200 MHz	800 or 1600 kHz [1]
2450–2500 MHz	800 kHz [2]
2650–2680 MHz	6 MHz [2]
2686.9375–2688.9375 MHz.	125 kHz [2]
6525–6875 MHz	5 or 10 MHz [1]
12,200–12,700 MHz	10 or 20 MHz [1]
13,200–13,250 MHz	25 MHz
18,360–19,040 MHz	up to 100 MHz
21,200–23,600 MHz	up to 100 MHz
31,000–31,200 MHz	up to 100 MHz
38,600–40,000 MHz	up to 50 MHz
Bands above 40,000 MHz [4]	

[1] The maximum bandwidth that will be authorized for each particular frequency in this band is detailed in the appropriate frequency table in § 94.65.

[2] 8.0 on a case-by-case basis.

[3] Assignments are made only in accordance with technical standards governing the Instructional Television Fixed Service as contained in Subpart I, Part 74 of this chapter.

[4] To be specified in authorization.

(c) The mean power of emissions shall be attenuated below the mean output power of the transmitter in accordance with the following schedule:

(1) When using transmissions other than those employing digital modulation techniques:

(i) On any frequency removed from the assigned frequency by more than 50 percent up to and including 100 percent of the authorized bandwidth, at least 25 decibels;

(ii) On any frequency removed from the assigned frequency by more than 100 percent up to and including 250 percent of the authorized bandwidth, at least 35 decibels;

(iii) On any frequency removed from the assigned frequency by more than 250 percent of the authorized bandwidth at least 43 plus 10 $\log_{10}$ (mean output power in watts) decibels or 80 decibels, whichever is the lesser attenuation.

(2) When using transmissions employing digital modulation techniques:

(i) For operating frequencies below 15 GHz, in any 4 kHz band, the center frequency of which is removed from the assigned frequency by more than 50 percent up to and including 250 percent of the authorized bandwidth: As specified by the following equation but in no event less than 50 decibels: $A=35+0.8(P-50)+10\log_{10}B$. (Attenuation greater than 80 decibels is not required.)

Where:

A=attenuation (in decibels) below the mean output power level

P=percent removed from the carrier frequency

B=authorized bandwidth in MHz

(ii) For operating frequencies above 15 GHz, in any 1 MHz band, the center frequency of which is removed from the assigned frequency by more than 50 percent up to and including 250 percent of the authorized bandwidth: As specified by the following equation but in no event less than 11 decibels: $A=11+0.4(P-50)+10\log_{10}B$. (Attenuation greater than 56 decibels is not required.)

(iii) In any 4 kHz band, the center frequency of which is removed from the assigned frequency by more than 250 percent of the authorized bandwidth: At least 43 plus 10 $\log_{10}$ mean output power in watts) decibels, or 80 decibels, whichever is the lesser atenuation.

(d) When a spurious emission results and causes harmful interference, the Commission may require appropriate technical changes in equipment to alleviate the interference.

(e) The emission of an unmodulated carrier is prohibited except for test purposes as required for proper station and system maintenance.

§ 94.73 Power limitations.

(a) On any authorized frequency, the average power delivered to an antenna in this service shall be the minimum amount of power necessary to carry out the communication desired, but in no event shall the average effective radiated power (ERP) as referenced to an isotropic radiator, exceed the values specified below. Further, the output power of a transmitter on any authorized frequency in this service shall not exceed the following:

(1)

Frequency band:	*Maximum transmitter output power*
952–960 MHz	20 watts [1]
1850–12,500 MHz	20 watts
12,500–40,000 MHz	10 watts
Above 40,000 MHz	As specified in authorization.

(2)

Frequency band:	*Maximum allowable ERP* [2]
952–960 MHz	70 dBm [3]
1850–2690 MHz	75 dBm [3] [4]
6525–40,000 MHz	80 dBm [4]
Above 40,000 MHz	As specified in authorization.

[1] When an omnidirectional transmitting antenna is authorized the maximum shall be 100 watts.

[2] Peak envelope power shall not exceed five times the average power.

[3] When an omnidirectional transmitting antenna is authorized in the bands 952–960 MHz and 2150–2160 MHz the maximum shall be 60 dBm.

[4] Except in the bands 2655–2690 MHz and 12,500–12,700 MHz the maximum allowable ERP is specified in § 94.77.

§ 94.75 Antenna limitations.

(a) Except where omnidirectional operation is specifically provided for under this part, each station in this service shall employ directional antennas with the center of the major lobe of radiation directed toward the receiving station with which it communicates or, if the path employs a passive repeater, to the center of that reflector.

(b) Directional antennas shall meet the performance standards (for parallel polarization) indicated in the following table:

Antenna standards

Frequency band (megahertz)	Maximum beamwidth to 3 dB points (included angle) (degrees)	Category [1]	Minimum radiation suppression at angle in degrees from center line of main beam in decibels— 5 up to 10	10 up to 15	15 up to 20	20 up to 30	30 up to 100	100 up to 140	140 up to 180
952 to 960 [2]	11	A	----------	6	11	16	20	24	27
	20	B	----------	----------	6	10	15	20	20
1,850 to 2,690 [2]	5	A	12	18	25	25	30	50	50
	8	B	5	18	22	23	25	30	36
6,575 to 6,875	1.5	A	27	30	35	38	43	65	65
	2.0	B	25	28	32	35	39	50	45
12,200 to 12,700	1.0	A	27	30	38	40	46	65	65
	1.5	B	25	28	37	39	45	45	50

Above 12,700: To be specified in authorization except that bands shared with domestic public radio service stations (part 21), shall conform to standards contained in § 21.108(c).

[1] Stations in this service must employ an antenna that meets the performance standards for category A, except that, in areas not subject to frequency congestion, antennas meeting standards for category B may be employed. Note, however, that the Commission may require upgrading to category A antennas at the licensee's expense of any category B antenna upon a showing that said antenna causes or is likely to cause interference to or receive interference from, any other authorized or proposed station which utilizes a category A antenna, and the use of the upgraded antenna is not likely to involve such interference.

[2] Except for the frequencies 952.1, 952.2, 952.3, 952.4, 952.5, 952.6, 952.7, 956.4, 956.5, 959.8, 959.9 MHz, where the maximum beamwidth is 360°.

[3] Except for 2,150–2,160 MHz, where the maximum beamwidth is 360°, and except for frequencies in the 2,500–2,690 MHz band where standards contained in subpart I, part 74 of this chapter apply.

(c) Applicants shall request, and authorizations for stations in this service will specify, the polarization of each transmitted signal. When periscope antenna systems or passive repeaters are employed, the applicant shall indicate the expected polarization of the reflected signal. The polarization should be expressed as either horizontal, vertical, or as an angle from vertical. Antenna polarizations of horizontal and vertical should be denoted by the abbreviations (H) and (V), respectively. For antennas using polarizations other than horizontal or vertical, the polarization should be stated in degrees measured from the vertical, with angles between 0° and +90° denoting the on-coming electric field vector displacement in a counterclockwise direction, and angles between 0° and −90° denoting the oncoming electric field vector displacement in a clockwise direction. In the event polarization diversity is authorized, the two polarizations must be separated by 90°. Antennas employing other than linearly polarized feed systems will not be authorized.

(d) New periscope antenna systems will be authorized upon a certification that the radiation, in a horizontal plane, from an illuminating antenna and reflector combination meets or exceeds the antenna standards of this section and, at locations where multiple periscope antennas are employed, that the cross-coupling between periscope antennas is suppressed by an amount equal to or greater than the radiation suppression specified in the standards for angles from the main beam of 140–180° for the particular band and antenna category selected. In no event will periscope antennas be authorized in frequency bands shared with common carriers.

(e) The provisions of this section shall apply to passive repeaters employed to re-direct or repeat the signal from a station's directional antenna system.

§ 94.77 Interference to geo-stationary satellites.

These limitations are necessary to minimize the probability of harmful interference to reception in the bands 2655–2690 MHz and 12,500–12,700 MHz, onboard geo-stationary space stations in the Fixed Satellite Service (Part 25). Stations authorized prior to August 1, 1975, exceeding power levels in paragraphs (a) and (b) of this section are permitted to continue until August 1, 1985.

(a) The transmitting antenna(s) of a station operating in the band 2655–2690 MHz and employing an equivalent isotropically radiated power exceeding +65 dBm, shall be so oriented that the direction of maximum radiation will be removed at least 2.0° from the geo-stationary satellite orbit, taking into account atmospheric refraction. However, an exception may be authorized in un-

usual circumstances upon a showing that there is no reasonable alternative to the transmission path proposed and there is no evidence that such exception would cause interference to the geo-stationary satellite orbit. In such case, a transmission path may be authorized where the maximum value of equivalent isotropically radiated power does not exceed: +77 to +85 dBm, on a linear scale (8 dB per degree) for any antenna beam directed between 0.5° and 1.5° of the stationary orbit.

(b) The transmitting antenna(s) of a station operating in the band 12,500–12,700 MHz and employing an equivalent isotropically radiated power exceeding +75 dBm, shall be so oriented that the direction of maximum radiation will be removed at least 1.5° from the geo-stationary satellite orbit, taking into account atmospheric refraction.

(c) Methods of calculating azimuths to be avoided may be found in CCIR Report Number 393 (Green Book), Geneva 1974; and in "Geo-stationary Orbit Avoidance Computer Program," FCC Report Number CC–7201, Washington, D.C., 1972. Note: The FCC report and a card deck of the computer program itself are available through the National Technical Information Service, U.S. Department of Commerce, Springfield, Va. 22151, as report numbers PB 211–500 and PB 211–501, respectively.

§ 94.81 Type acceptance and technical information filings of microwave equipment.

(a) Except for equipment used under a developmental authorization, equipment used in this service shall have received either type acceptance by the Commission for use under applicable rules of this subpart, or technical information for application reference shall have been submitted to the Commission, as appropriate, as follows:

(1) Type acceptance by the Commission is required for all transmitters employed in this service.

(2) Technical information for application reference shall be filed with the Commission for receivers in this service when the output of the receiver is employed directly or indirectly to modulate a transmitter in this service.

(3) Technical information for application reference shall be filed with the Commission for each antenna employed in this service.

(b) Requirements for obtaining type acceptance by the Commission and in submitting technical information for application reference to the Commission are contained in Subpart J, Part 2 of this chapter.

§ 94.83 Transmitter control requirements.

Each transmitter shall be so installed and protected that it is not accessible to or capable of operation by persons other than those duly authorized by the licensee.

§ 94.85 Transmitter measurements.

(a) The licensee of each station shall employ a suitable procedure to determine that the carrier frequency of each transmitter is maintained within the tolerance prescribed in this part. This determination shall be made, and the results thereof entered in the station records; when the transmitter is initially installed; when any change is made in the transmitter which may affect the carrier frequency or the stability thereof; or routinely at least once annually.

(b) The licensee of each station shall employ a suitable procedure to determine that the power delivered by the transmitter to the antenna and the maximum effective radiated power (ERP) does not exceed the limitations specified in the microwave station authorization. Such a procedure may consist of measuring the power output of the transmitter, recording the measure ments, and calculating both the power delivered to the antenna system and the ERP. This determination shall be made, and the results thereof entered in the station records; when the transmitter is initially installed; when any change is made which would increase the power delivered to the antenna or the ERP; or routinely at least once annually.

Subpart D—Station Operating Requirements

§ 94.101 Suspension of transmission required.

The radiation of the transmitter shall be suspended immediately upon notification by the Commission of a deviation from the technical requirements of the station authorization when such deviation causes harmful interference to another licensee. Until such deviation is corrected, only transmissions concerning the immediate safety of life or property may be conducted, except that such transmissions shall be suspended as soon as the emergency is terminated. In the absence of harmful interference, upon detection or notification by the Commission of deviation from the technical requirements of the station authorization, transmission may continue *provided* that the licensee takes immediate steps to correct the deviation involved.

§ 94.103 Operator requirements.

(a) All transmitter adjustments or tests during or coincident with the installation, servicing or maintenance of a radio station which affect the proper operation of such station, shall be made by or under the immediate supervision and responsibility of a person holding a first- or second-class commercial radio operator license, either radiotelephone or radiotelegraph, who shall be responsible for the proper functioning of the station equipment.

(b) An unlicensed person, with the consent or authorization of the licensee, may employ stations in this service for the purpose of telecommunications.

(c) The provisions of this section authorizing unlicensed persons to operate stations shall not be construed to change or diminish in any respect the responsibility of station licensees to have and to maintain control over the stations licensed to them (including all transmitter units thereof), or for the proper functioning and operation of those stations (including all transmitter units thereof) in accordance with the terms of the licenses of those stations.

(d) Notwithstanding any other provisions of this section, unless the transmitter is so designed that none of the operations necessary to be performed during the course of normal condition of service may cause off-frequency operation or result in any unauthorized radiation, and unless the transmitter is so installed that all controls which may cause improper operation or radiation are not readily accessible to the person operating the transmitter, such transmitter shall be operated by a person holding a first- or second-class commercial radio operator license, either radiotelephone or radiotelegraph, as may be appropriate for the type of emission being used, issued by the Commission.

(e) Each person required to have an operator's license under this section shall post, or have immediately available at a place he is normally based or on duty, the original of his license, except that when he is performing duty at a station where he is not normally based, he shall have on his person a valid license identification card. (FCC Form 785–F).

§ 94.105 Station identification.

Stations in this service are exempt from the requirement to identify transmissions by call sign or any other station identifier.

§ 94.107 Posting of station authorization and transmitter identification cards, plates, or signs.

(a) The original of each transmitter authorization in this service shall be posted or immediately available at the address at which station records are maintained as named in the authorization.

(b) A clear and legible copy of the current transmitter authorization shall be posted or be immediately available at the transmitter location.

(c) A Transmitter Identification Card (FCC Form 452–C) indicating the transmitter call sign and the licensee's name and mailing address shall be affixed to each transmitter. A plate of metal or other durable substance may be substituted for the Form 452–C provided it contains the required information.

§ 94.109 Inspection of stations and station records.

Any station and records of stations in this service shall be made available at any reasonable time for inspection by an authorized representative of the Commission.

§ 94.111 Inspection and maintenance of tower marking and associated control equipment.

The licensee of any radio station which has an antenna structure required to be painted or illuminated pursuant to the provisions of section 303(q) of the Communications Act of 1934, as amended, and/or Part 17 of this chapter, shall operate and maintain the tower marking and associated control equipment in accordance with the following:

(a) The tower lights shall be observed at least once each 24 hours, either visually or by observing an automatic and properly maintained indicator designed to register any failure of such lights, to insure that all such lights are functioning properly as required; or, alternatively, there shall be provided and properly maintained an automatic alarm system designed to detect any failure of the tower lights and to provide indication of such failure to the licensee.

(b) Any observed or otherwise known failure of code of rotating beacon light or top light not corrected within thirty minutes, regardless of the cause of such failure, shall be reported immediately by telephone or telegraph to the nearest Flight Service Station or office of the Federal Aviation Administration. Further, notification by telephone or telegraph shall be given immediately upon resumption of the required illumination.

(c) All automatic or mechanical control devices, indicators, and alarm systems associated with the tower lights shall be inspected at intervals not to exceed three months, to insure that such apparatus is functioning properly.

(d) All lighting shall be exhibited from sunset to sunrise unless otherwise specified in the instrument of station authorization.

(e) A sufficient supply of spare lamps shall be maintained for immediate replacement purposes at all times.

(f) All towers shall be cleaned or repainted as often as is necessary to maintain good visibility.

§ 94.113 Station records.

Each licensee of a station in this service shall maintain records in accordance with the following:

(a) For all stations, the results and dates of the transmitter measurements required by § 94.85 and the name of the person or persons making the measurements.

(b) For all stations, when service or maintenance duties are performed, which may affect their proper operation, the responsible operator shall sign and date an entry in the station record concerned, giving:

(1) Pertinent details of all transmitter adjustments performed by him or under his supervision;

(2) His name and address and the class, serial number, and expiration date of his license, provided that this information, so long as it remains unchanged, is not required to be repeated in the case of a person who is regularly employed as operator on a full-time basis at the station.

(c) When a station in this service has an antenna structure which is required to be illuminated, appropriate entries shall be made as follows:

(1) The time the tower lights are turned on and off each day, if manually controlled.

(2) The time the daily check of proper operation of the tower lights was made, if an automatic alarm system is not employed.

(3) In the event of any observed or otherwise known failure of a tower light:

(i) Nature of such failure.

(ii) Date and time the failure was observed or otherwise noted.

(iii) Date, time, and nature of the adjustments, repairs, or replacements made.

(iv) Identification of Flight Service Station (Federal Aviation Administration) notified of the failure of any code or rotating beacon light not corrected within 30 minutes, and the date and time such notice was given.

(v) Date and time notice was given to the Flight Service Station (Federal Aviation Administration) that the required illumination was resumed.

(4) Upon completion of the 3-month periodic inspection required by § 94.111 (c):

(i) The date of the inspection and the condition of all tower lights and associated tower lighting control devices, indicators, and alarm systems.

(ii) Any adjustments, replacements, or repairs made to insure compliance with the lighting requirements and the date such adjustments, replacements, or repairs were made.

(d) The records shall be kept in an orderly manner, and in such detail that the data required are readily available. Key letters or abbreviations may be used if proper meaning or explanation is set forth in the record.

(e) Each entry in the records of each station shall be signed by a person qualified to do so, having actual knowledge of the facts to be recorded.

(f) No record or portion thereof shall be erased, obliterated, or willfully destroyed within the required retention period. Any necessary correction may be made only by the person originating the entry, who shall strike out the erroneous portion, initial the correction made and indicate the date of correction.

(g) Records required by this part shall be retained by the licensee for a period of at least one year.

Subpart E—Developmental Operation

§ 94.151 Eligibility.

An authorization for developmental operation in this service may be issued for the purpose of developing a radiocommunication service or technique which offers reasonable promise of substantial contribution to the expansion or extension of the radio art, along lines not already investigated.

§ 94.153 Showing required.

Each application for developmental operation shall be accompanied by a showing that:

(a) The applicant has an organized plan of development leading to a specific objective;

(b) A point has been reached in the program where actual transmission by radio is essential to the further progress thereof;

(c) The program will be conducted by qualified personnel;

(d) The applicant is legally and financially qualified, and possesses adequate technical facilities for conduct of the program as proposed; and,

(e) The public interest, convenience, and necessity will be served by the proposed operation.

§ 94.155 Limitations on use.

Stations used for developmental operation shall be constructed and used in such a manner as to conform with all of the technical and operating requirements of Subparts C and D of this part, unless deviation therefrom is specifically provided in the instrument of authorization.

§ 94.157 Frequencies available for assignment.

Stations engaged in developmental operation may be authorized to use a frequency, or frequencies, available for the service in which they propose to operate. The number of channels assigned will depend upon the specific requirements of the developmental program itself, and the number of frequencies available in the particular area where the station will be operated.

§ 94.159 Interference.

The operation of any station engaged in developmental work shall be subject to the condition that no harmful interference is caused to the operation of stations licensed on a regular basis under any part of the Commission's rules.

§ 94.161 Special provisions.

(a) The developmental program as described by the applicant in the application for authorization shall be substantially followed unless the Commission shall otherwise direct.

(b) Where some phases of the developmental program are not covered by the general rules in this chapter and the rules in this part, the Commission may specify supplemental or additional requirements or conditions in each use, and deemed necessary in the public interest, convenience, and necessity.

(c) The Commission may, from time to time, require a station engaged in developmental work to conduct special tests which are reasonable and desirable to the authorized developmental program.

§ 94.163 Required supplementary statement.

Every application for authority to engage in developmental operation shall be

accompanied by a statement signed by the applicant in which it is agreed that any authorization issued pursuant thereto will be accepted with the express understanding of the applicant that it is subject to change in any of its terms or to cancellation in its entirety at any time, upon reasonable notice but without a hearing, if, in the opinion of the Commission, circumstances should so require.

§ 94.165 Report of operation.

(a) A report on the results of the developmental program shall be filed with and made a part of each application for renewal of authorization or in cases where no renewal is requested, such report shall be filed within 60 days of the expiration of such authorization. Matters which the applicant does not wish to disclose publicly may be so labeled; they will be used solely for the Commission's information, and will not be publicly disclosed without permission of the applicant.

(b) The report shall include comprehensive and detailed information on the following:

(1) The final objective.
(2) Results of operation to date.
(3) Analysis of the results obtained.
(4) Copies of any published reports.
(5) If continued operation is desired, the need therefor.
(6) Number of hours of operation on each frequency.

APPENDIX A

Parties Submitting Comments in Response to the Notice of proposed rulemaking in Docket 19869

Aeronautical Radio, Inc. (ARINC)
Aerospace and Flight Test Radio Coordinating Council (AFTRCC)
American Petroleum Institute (API)
American Telephone and Telegraph Company (AT&T)
Arizona Department of Public Safety (Arizona)
Association of American Railroads (AAR)
Associated Public-Safety Communications Officers, Inc. (APCO)
Association for Graduate Education and Research of North Texas
California Division of Communications (California)
California Microwave, Inc.
California Public-Safety Radio Association (CPRA)
Cardion Electronics, Woodbury, New York (Cardion)
Central Station Industry Frequency Advisory Committee (CSIFAC)
Collins Radio Company (Collins)
Colorado Division of Communications (Colorado)
Compucon, Dallas, Texas
Dartmouth Medical School (Dartmouth)
Electronic Industries Association (EIA)
Forest Industries Telecommunications (FIT)
Granger Associates, Menlo Park, California (Granger)
GTE Services Corporation (GTE)
International Microwave Corporation (IMC)
Microflect, Salem, Oregon
Mobile Marine Radio, Inc. (Mobile Marine)
National Association of Manufacturers (NAM)
Norden Division of United Aircraft (Norden)
RCA
Research Associates, Hot Springs, Arkansas
Special Industrial Radio Service Association, Inc. (SIRSA)
Taft Broadcasting Corporation, Houston, Texas (Taft)
Ray D. Thrower, 8694 Warner Drive S.E., Salem, Oregon 97301
Utilities Telecommunications Council (UTC)
Washington State Patrol
Wentronics, Inc.

[FR Doc.75-12100 Filed 5-12-75;8:45 am]

Just Released

CODE OF FEDERAL REGULATIONS

(Revised as of January 1, 1975)

Title 4—Accounts	$2.70
Title 7—Agriculture (Part 1500–End)	6.30
Title 10—Energy (Parts 0–199)	4.90
Title 12—Banks and Banking (Parts 1–299)	6.35

[A Cumulative checklist of CFR issuances for 1975 appears in the first issue of the Federal Register each month under Title 1]

**Order from Superintendent of Documents,
United States Government Printing Office,
Washington, D.C. 20402**